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TABLE OF CONTENTS.

PAGE.

Brain Lesions and Functional Results. By Daniel Clark, M. D., ... 241
The Structure of the Vessels of the Nervous Centers in Health, and their Changes in Disease. Part VI. By Theodore Deecke, ... 273
On Some Changes in the Ganglion Cells of the Grey Cortex of the Brain in Acute Delirium, and their relation to those in Acute Insanity and in Dementia. Part I. By Theodore Deecke, ... 285
Narcolepsia. By Joseph Workman, M. D. 294
The Causal Relation Nerve Stimulants Sustain to Insanity. By D. R. Wallace, M. D., ... 300
M. Christian, on Non-Restraint, ... 307
Note on Feigned Epilepsy. By M. G. Echeverria, ... 317

BOOK REVIEWS AND NOTICES:

Thirty-third Report of the Commissioners in Lunacy (England) to the Lord Chancellor, ... 319
Topische Diagnose der Gehirnkrankheiten, eine Klinische Studie. By Dr. Hermann Nothnagel. (Topical Diagnosis of Diseases of the Brain), ... 334
Handbuch der Geisteskrankheiten. By Dr. Heinr. Schüle. (Handbook of Mental Diseases), ... 339
Compendium des Psychiatrie für Praktische Aerzte und Studierende. By Dr. J. Weiss. (Compendium of Psychiatry for Practical Physicians and Students.), ... 340
Diseases of the Pharynx, Larynx and Trachea. By Morell Mackenzie, M. D., ... 343
A Treatise on Diphtheria. By A. Jacobi, M. D., ... 343
A Practical Treatise on Nasal Catarrh. By Beverley Robinson, M. D., 343
Hygienic and Sanative Measures for Chronic Catarrh, etc. By Thomas F. Rumbold, M. D., ... 343
On the Construction, Organization and General Arrangements of Hospitals for the Insane, with some Remarks on Insanity and its Treatment. By Thomas S. Kirkbride, M. D., LL. D., ... 348
The Practitioner's Reference Book. By R. J. Dunglison, A. M., M. D., 351

SUMMARY:

Election of Dr. John P. Gray, as Associate Member of the Medico-Psychological Society, of Paris, ... 353
Administrative Duties of Medical Superintendents, ... 353
Dr. J. B. Andrews and the New State Asylum, at Buffalo, ... 353
International Medical Congress, 1881, ... 354
The Training Necessary for a Real Knowledge of Insanity and its Treatment, ... 355
Model for Illustrating the Relation of Nerve Fibres to the Medulla and Spinal Cord, ... 356

OBITUARY:

William Lauder Lindsay, M. D., F. R. S. E., F. L. S., ... 358

AMERICAN
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BRAIN LESIONS AND FUNCTIONAL RESULTS.*

BY DANIEL CLARK, M. D.,

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There is great danger in medical research to accept as theories preconceived notions based on a few isolated cases, and then to fortify these dubious interpretations of physical or mental phenomena by dragging in, neck and heels, every iota which seems to corroborate our views. On the other hand, the ardent but discreet investigator will adopt no great general principles until he has at his command sufficient data upon which to base them, beyond the bare presumption of vague probabilities. Richet, in his "Histology and Physiology of the Cerebral Convolutions," says in the preface: "There is nothing more baneful than to treat hypotheses as certainties. On the contrary, when serious criticism has revealed the defects and feebleness of an experiment, a real service has been rendered, for it may incite to new experiments and unequivocal conclusions. Inductions from probabilities or ill-demonstrated experiments are unreliable, and intelligent skepticism is more valuable to the advance of science than unbridled enthusiasm."

*Read before the Canada Medical Association, at Ottawa, September 1, 1880.

This honest expression of such an investigator should lead us to pause before drawing conclusions and establishing theories with insufficient proofs. It will be seen in the cases adduced of lesion of the brains that this organ can stand more rough treatment in many of its parts than almost any other organ of the body. In fact, such laceration of its delicate structures can take place without any serious mental or physical disturbance, that we almost unconsciously take for granted that many parts of it must be of secondary importance in the animal economy. It is true that a large majority of those injured in the brain are afterwards afflicted with such diseases as epilepsy, paralysis, head distress, loss of memory, and such like, yet it is remarkable how many examples of the most extensive lesions of the brain can be found with no such results. In a monograph published by me a short time ago I endeavored to show that localization of functional power resided only in the basal ganglia, and that the masses of cerebral substance above them were only depositories of nervous energy. If this opinion be based on a physiological fact, it would help to solve this enigma. It is well known by all medical readers that a sharp controversy had been carried on, and antagonistic opinions have been uttered by the leaders of thought in our profession on the functions of the convolutions of the brain. The brain has been mapped out with the accuracy of the streets of a city, and each district has been allotted its own work to do. Although no dividing line exists in the substance of the brain, yet the comparatively slender divisions of many of the sulci are made to be boundaries of functional energy in which great differences of operation exist. It is not the province of this paper to take up this subject in detail, but rather to show by the record of cases how foreign bodies and

disease can virtually destroy many of these so-called centers, without any commensurate functional disturbance such as might be expected if these parts were distinct organs; also to show that mentality is not interfered with in these cases to the extent which at one time we were led to believe. The psychical results would be a good nut for the "bumpologist" to crack, in these days of infidelity in the doctrines of Gall and Spurzheim. All anatomists know, that although the fissures of the brain in man maintain a certain degree of uniformity in direction and outline, yet the differences in detail are considerable. It will also be observed that these fissures do not make distinct divisions of the surface. The even continuity of the surface of every convolution by means of an isthmus, (so to speak), at the extremities and sides of each, indicate no striking dividing line between each of them. The dips in the grey matter lying underneath these fissures and in proximity to the white substance, show that a certain degree of uniformity in quantity of grey matter is present throughout the periphery of the brain. It is true that differences in cell formation are seen in the various layers of the cortical substance, but these cellular distinctions are found only in each layer. There is no physiological distinction found in the various convolutions distinct from one another to account for the varied functions in these so-called motor centers, as claimed by the Ferrier school. The uniformity of cell structure in the separate layers of the cortical substance is continuous, and nowhere bounded by the surface fissures and convolutions. In other words, all the convolutions are similar in structure, and were sections of each cut out from without, inwards, and submitted to the closest analysis, no microscopist could tell where to locate each part. All are as uniform as would be sections of the

cortical substance of the liver or kidney. If we compare the convolutional structures of the cerebrum with that of the cerebellum, it will be seen that they are constructed on the same plane. (Richet.) In the region where the distinctive giant cells exist, (i. e., in the five layer type of the ascending frontal and parietal convolutions), all the cortical regions of grey matter have no distinctive anatomical characteristics except the presence of giant cells. Charcot suggests that all the different sized cells may be of the same kind in different degrees of development. In this way he thinks it possible that even motor centers may change their centers. This is a convenient theory to account for the fact that such an attack as aphasia often passes away, although its so-called motor center remains impaired.

This want of dividing lines on the external surface of the brain is, on physiological grounds, a momentous objection to distinct centers in the cortical substance. Let us now consider this subject from another point of view. Fritsch, Hitzig, and other experimenters agree that in no appreciable degree do mechanical or chemical agents excite motion in the cerebral substance. Excitement by galvanism is said to be very feeble, and very limited in either the cerebrum or cerebellum, and this want of response is seen throughout. It is evident that in this way—powerful as the agent is—no functional center could be found on the surface. Herrman shows that even after the grey matter is destroyed by chemical cauteries, a very feeble current of galvanism applied to this surface produced a slight movement, and significantly adds that in cutting away slices from the brain, the effect was more decided in proportion as the *central regions were approached.* (Richet.) In other words, the focus of nerve energy seemed to be in the ganglia at the base of the brain, and that the destruction of the

cerebral substance did not produce that disturbance of the system commensurate with the loss of substance, once supposed to be so necessary to the continuance of physical life and mental action. Richet says, in speaking of the localization theory as propounded by Ferrier and his ardent followers, that "absolute, inflexible localization of the motor zones is impossible. There are zones which encroach upon each other, but none of these zones have limits of determined, rigorous constancy. The best proof of this is the difference existing among authors." If this means anything, it is that although paralysis and abnormal functions of the brain in many instances follow the destruction of certain cortical parts or are the results of disease, and although a certain degree of uniformity in physical results follows, yet it is equally true that these same areas may be destroyed without any such manifestations following. Their own experiments are taken as proof of this fact. These circumscribed areas can not therefore by any show of reasoning be *the* organs, which are the centers of distinct functional activity. These local changes may affect the co-ordinating and mental powers, but the centers of these activities must be sought for elsewhere. To reconcile these undoubted variations in results and possibly arrive at the truth, let it be assumed that the basal ganglia are the centers of these functions. Let it also be assumed that the cerebrum and cerebellum are not directors of motion, but only *conservators* of nerve energy, both receptive and functional. Let us say that these ganglia are focal centers to all the nerve tracts of the system. Whatever nerve injury may do in other parts of the nerve mass within the skull, without dangerous results, it is evident by experiments and the results of disease that no serious impairment can take place in all or any part of these ganglia without dis-

aster; hence their supreme importance. In fact, this focus of influence might be called the metropolis of life. Maudsley, in "The Pathology of Insanity," says: "The disturbance of the cortical cells is in reality secondary; it is a reflex functional result of the primary morbid action that is going on in the neighborhood." And again: "Portions of the hemispheres may be cut away without the patient feeling it, though he is fully conscious." Ferrier locates the motor center of the opposite upper limbs in the upper part of the *ascending frontal convolution;* in the *first frontal convolution* the movements of the head; in the *second* or *center convolution* the motive power of the facial movements; and in the *third convolution* the center of the movement of the tongue and lips in monkeys, and the center of the faculty of articulate speech in man. This is often called "Broca's Convolution." In the *superior parietal* lobe is located the center for the movements of the lower limbs. The *gyrus angularis* is said to possess some influence over sight. Dr. Laffont, in a paper read before the Paris Anatomical Society of last year, states "that the center which controls the circulation of the abdominal viscera is in the floor of the fourth ventricle, because local irritation of this part produces unusual activity in the blood movement of the liver and intra-abdominal organs." Other investigators, equally credible, say that the grey substance of the fourth ventricle is the motor center of respiration. The occipital lobes the centers of vision. Aphasia, or the loss of ideo-motor coördination, is circumscribed by some to disease or injury of the posterior part of the third left frontal convolution. In passing, it may be said, that Ferrier still farther divides his functional foci, and puts "subjective auditive sensation" in the first temporal convolution, and "subjective olfactory sensation" in the cornua ammonis. In short,

it may be said that in cerebral localization, the encephalon does not represent a homogeneous organ, an unit, but rather an association, or a confederation, composed of a certain number of diverse organs. To each of these organs belong distinct physiological properties, functions and faculties. (Charcot.) It is well to keep these views in mind and see if they are corroborated by facts. It is to be remembered that there is no direct nervous communication with the body from the cerebrum and cerebellum except through the basal ganglia, notwithstanding statements to the contrary. Whatever injury, disease or traumatic lesion may inflict on these upper nerve masses with comparative impunity, analogous injury from the same causes can not be inflicted on the central or base organs without dangerous results. In other words, these are the true motor and sensory centers of the system, and there is no necessity of going beyond them to prove a localization theory. The distinction between these by well defined boundaries, and the want of uniformity in structure, point strongly to distinct functions. The outshoots of the spinal cord and the numerous nerve ramifications not only to the organs of special sense, but also to the locomotive and organic systems, point out these districts as being the peculiar focal points of functional and psychical life. If this theory be correct, it can explain all the phenomena manifested by experiments made, and pathological conditions found, on the cortical substance, without resorting to the chart made out from such shifting, incomplete and changeable boundaries as the sulci of the convolutions afford. The "bumpologist" conveniently locates all mental centers in the cortical substance nearest to his manipulations, and ignores all the similar surfaces at the base and between the hemispheres, because this *terra incognita* is not convenient to map out. He can

not reach these parts. Therefore they must be useless appendages. He forgets nature has no lumber room. In somewhat the same way, the Ferrier school of investigators find certain functional disturbances following the abrasion, excision, or galvinism of definite cortical parts with a considerable degree of uniformity. Based on these manifestations already, with considerable confidence, it is said nearly all the functions of the body are located on the exterior part of the nerve mass, which is within reach of experiment, and somewhat hasty conclusions are drawn from the results. All the rest of the brain mass which has a substance exactly similar in structure to the external grey matter, is practically ignored, in spite of its paramount importance, and which is also evident from the complexity of the structure, and from the fatal results which flow from injury to these central parts. It seems to be overlooked that any injury to the cortical substance must necessarily affect the lower ganglia to which it lies in juxtaposition, and to which it stands so nearly related. The periphery of the brain doubtless has much to do in stimulating to action these centers. In the latter are found the distinctive seats of functional activity, and in the superimposed mass the residuary power to impel but not to direct—to give additional vitality, but not to indicate the mode and direction this force is to take. This discriminative power is left to be performed by these central glands, which are safely situated in the center of these sympathetic and active auxiliaries. Not only is this true in respect to function, but it is equally true as respects sensation. Sensation and function have a community of interests, and are *focalized* together. Dr. Symonds, in the Gulstonian lectures, says: "Pain does not seem to be in the nervous matter, whether vesicular or tubular, of the cerebral hemispheres, or of the cer-

ebellum. No evidence of feeling has been obtained by vivisectors till they approached the sensory ganglia—the *thalami optica* and *corpora quadrigemina*. But these are the centers of sensation to all parts of the body as well as to the head." It is satisfactory to see that recent investigators are paying more attention to the central organs. Their researches go to show that very important functions are likely to be found having their excito-motor centers in the internal parts of the brain. These experiments—as far as they go—point to the probabilities of my theory of localization. Richet, in speaking of cerebral incitation by means of electricity, is forced to say in explanation of certain phenomena: "Known facts demonstrate that excitation of the convolutions which surround the sigmoid gyrus act with extreme energy upon the ganglionic centers of the brain, (opto-striated bodies). It is possible that such excitation culminated in the cerebral centers, and that these centers, thus surcharged, discharge to the muscles." Charcot says, in speaking of the lenticular nucleus of the *corpus striatum*, "these grey nuclei are possibly so many centers endowed with distinct properties and functions." This is a germ idea of the theory I propounded several years ago, in the following words: "Large portions of the cerebrum and cerebellum may be taken away from the living body without immediate danger of death, but the organs in the base of the brain, from which spring the numerous nerves so essential to life, can not be touched in vivisection or by disease with impunity. From this central region nerve influence radiates to every part of the body, making its connections with the depositories of nerve power in the spinal cord, and with the ganglia of the sympathetic system." (*Vide* "An Animated Molecule," p. 28). The experiments of Lussana and Lemoigne go to show that the

foci of various special movements were found about the base of the encephalon, pons, medulla oblongata and other parts. The considerable amount of lesion often discovered at the floor of the fourth ventricle in general paralysis, and the degeneration of cerebral and spinal nerves, warn us against too ready an indictment of motor centers in the cerebral cortex, as answerable for the frequent and characteristic motor impairment; that of the lips, tongue, face and articulary organs generally. (Mickle, General Paralysis, ed. 1880). If Charcot had added to his hypotheses the probability that the base and central ganglia were the true and only motor centers, a solution of the difficulties which surround the Ferrier system could be arrived at without ignoring the doctrines of localization. Let the area be circumscribed to really the most vital parts of the brain, then could all the phenomena be explained. It would then become more evident why traumatic injury and destruction from pathological processes on the surface are not always followed by functional and mental unsoundness. If this explanation be accepted it will be seen that the surfaces and upper portions of these nervous masses thus become adjuncts to vital organs in the center and base of the brain. The former, in their analogy of structures and juxtaposition, give power but do not impart function; they are auxiliaries but not necessities to the ganglionic centers; they intensify energy but do not direct; they are—as it were—additional cells to the battery, but are not its controlling agency. I repeat this view in another form to avoid ambiguity and misconstruction. It is worthy of remark in this connection, as it is a matter of experiment, that such a large area as the Rolandic zone can be destroyed, and yet leave the intelligence unimpaired. A considerable portion of the frontal or even of the occipital lobes can be removed without any

apparent alteration of the intellectual powers. The corresponding lobes of either the frontal, occipital, or parietal regions have been destroyed without affecting the conscious being, or those functions said to have their seat of power in these parts. It is evident, then, that these are not the *sole* habitations of mind or certain physical operations. The reciprocity between mind and body is strikingly seen in aphasia. There can be no aphasia without more or less impairment of the memory, judgment and imagination, yet this functional and mental disorder can exist either with or without injury to the third frontal convolution. What basis, then, is there to suppose it so necessary to certain physical operations? If it could be shown that sight, hearing, tasting, often were accomplished when the optic and auditory and gustatory nerves and the region of their insertion were destroyed, then it would be plain that these were not the only tracts of nerve influence for these centers of special sense to reside in, nor the avenues of each peculiar manifestations of sensation. In the same way, if we can have aphasia, paralysis of the legs, arms and face with these so-called centers of nerve force unimpaired, or if impaired without these results, then it is beyond controversy that this doctrine of the cortical localization of specific functional energy is not proven. What may be in store in the future for these earnest and honest workers is only matter of conjecture. Richet pertinently says, (page 115): "If the crucial furrow is really the motor center of the legs, then by removing both right and left convolutions the legs should become paralyzed; if not, then it is not a true motor center. It would then be necessary to admit that there are several organs for one function, several motor centers for one limb, which is contrary to probability and to fact." He suggests as a way out of the

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difficulty that as the spinal cord conduction, (according to Vulpian), is carried on equally by all parts of the grey matter, it is possible that the same indifference holds for the brain, though less in degree. In other words, *there are habitual roads, but no compulsory ones.* This view would be—if true—a death blow to the organic local theory, as applied to the cortex. This theory would not meet Ferrier's definition of localization, which is said by him to be "a complex arrangement of individually differentiated centers, which in associated action, regulate the various muscular adjustments necessary to maintain equilibrium of the body."

It will be seen that so far the greatest interest centers round the third left frontal convolution on account of the stress laid on the fact that aphasia is so often found as a result of its injured or diseased condition. If it can be proved that this imperfection of speech is always conjoined with an impaired condition of this locality and *never otherwise*, then is the battle won for localization of functional power in the cortical substance, for it would be fair to infer that other centers for other functions would be found in similar parts of the same field of investigation. Unfortunately for this doctrine, the exceptions to these results are too many to be ignored, and these show that this spot is not the center of speech, nor its injury the sole cause of aphasia. It has been found in numbers of examples that aphasia is found with this convolution intact. Not only this, but it is known that defects in speech in its different forms of language such as writing, reading, singing, drawing and imitation —in fact aphasia in all its forms follow lesion in the island of Reil. (*London Lancet*, Amer. Ed., July, 1880, p. 34.) Aphasia is known to exist as the result of disease in the right hemisphere, and that not in the corresponding third frontal of the hemisphere. It can not

be supposed this reputed motive brain tissue which excites the functions of speech may be destroyed and yet the peculiar energy which animates it can remain unabated after its obliteration has taken place, unless it is claimed that the corresponding convolution on the right, in a vicarious way, does the work of its fellow. If such were the case, then the third left frontal convolution could claim no pre-eminence, as the sole seat of the faculty of articulate language. To get over this difficulty this school of thinkers introduce what is called *the theory of supplementation.* They say some other part of the cortical substance comes to the rescue when any center of function is destroyed. This neighborly assumption of peculiar and distinct labor is not found in any other part of the system, however willing the organs may be to give a helping hand to one another. We are told it may be the corresponding part or some other cortical area. This is virtually a giving up of the doctrine of these so-called "true motor centers." Here let me say, in passing, that fallacy in vivisection often arises in forgetting that experiments on the brains of inferior beings by the destruction of parts, do not always produce analogous effects on man when corresponding parts are injured. We may remove the whole of a cerebral hemisphere of a pigeon or rabbit, with the only functional result of a slight impairment in flying or jumping. No hemiplegia will follow such as is the case with like injury to the dog or monkey. Man is much more sensitive to such lesions only in certain parts. In fact, the whole brain may be removed in many creatures without affecting their locomotion. We know that in man, disease, such as sclerosis and softening, may cut off the spinal cord from cerebral influence, yet functional activity in the parts supplied by it still goes on with unabated vigor. In the same way, we find that if the base and

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central organs remain unimpaired, no marked symptoms arise except by sympathetic connections with adjacent parts. This shows the fallacy of reasoning by analogy between man and animals based on experiments. There are common results and also great differences.

It is now important to say a few words about the circulation of blood in the brain, to show how much more plentifully the center and base are supplied with blood than are the superior parts of the cerebrum and cerebellum. *It is not to be forgotten that where the largest supply of blood is needed for nutrition, there is found the greatest functional activity.* We are all well acquainted with the wonderful distribution and anastamoses of the blood in the base of the brain, both in the circle of Willis and in the cerebral arteries springing from this polygon of vessels. We are also aware of the fact that two sets of branches shoot from these main trunks in almost parallel lines. The one class goes into the medullary and cortical substance in an outward direction from those central reservoirs, but does not reach the surface; another class runs to the periphery and forms the *pia mater*, from which branch inwards numerous arterioles to supply the cortical and medullary parts not reached by the vessels springing from the center. These two sources of supply are not only distinct as between each of their own vessels, but also unconnected to a great extent with one another. The anastamosis between these two sets of vessels is very slight indeed. The streamlets in each can be dried up or seriously interrupted in many ways without disturbing the neighboring vessels to any appreciable degree. This accounts for so many circumscribed lesions in these parts, and for the little effect they produce in the adjacent tissues and circulation. I am inclined to think that on account of this localization of circulation and consequently a tendency to restricted

areas of disease, a good many fallacies of reasoning have obtained currency in respect to centers of function. Heubner cites pathological cases, which indicate that obliteration of one of the large vessels of the cortical system, or any of its branches, have during life given no pronounced symptom. (Charcot).

Let us now turn to the arterial circulation in the *grey central ganglia.* This section includes the *thalami optici*, the *corpora striata*, and their appendages. It needs only a moment's reflection of our anatomy to realize that the central ganglia are largely supplied from the Sylvian artery, as well as from the nutrient vessels, which spring in large numbers from all the cerebral arteries and from the basilar at its bifurcation. The sum total of all these, show a much greater capacity for blood supply per square inch, than in any other part of the brain. Such being the case, we know this augmented normal supply means proportionally increased activity. Hence it follows as a matter of fact that any abnormal increase or decrease of blood means a greater or less physical or mental perturbation. Congestion, as well as anæmia, is followed by the same results, that is, more or less suspended sensibility and retarded voluntary action. Where the blood supply is found to be naturally the most copious, there is greater susceptibility of this kind, and as a corollary it may be added, there is functional activity in proportion to the normal blood supply. The difference in this respect between the cortical substance and the central parts is most marked. This points to the former as being only subsidiary to the latter, taking the circulation as a physiological basis to judge from in this respect. Although the central and basal ganglia are much less in bulk than is the cortical substance, yet about one-half of the blood which enters the encephalon is distributed to the

former. It would be interesting to know if this unequal supply has anything to do with the pathological fact that in hemiplegia from cortical disease we find it "limited, transient, and variable," (Charcot), but in paralysis of the body from central disease it is permanent, general, and uniform. It is a pathological fact that paralysis, general or partial, can be produced by *any part* of the brain being affected with inflammation, embolus, or tumor, showing that loss of function is not consequent on degeneration or destruction of some localized spot. That part of the brain which demands the greatest amount of blood in the performance of its work must necessarily have the greatest activity. Let me then repeat, in another form, that a very superficial knowledge of the brain circulation indicates how direct and ample is the blood supply to the base and central ganglia in comparison with the cortical supply. This is especially true of the arteries which run to the *corpus striatum* and *thalamus opticus*. The cortical substance is nourished in a roundabout way through the *pia mater*, but the central system is reached directly through the large central vessels springing from the circle of Willis, which furnishes a perfect fountain of blood supply near at hand. So distinct and important is the circulation in this grand center, that when obliteration of the Sylvian artery takes place, all the ganglionic centers are affected, and cerebral hemiplegia, accompanied by hemianæsthesia is the result. This physiological fact alone, shows the greater importance these ganglia hold—it seems to me—as functional centers in comparison to the cortex or even the entire hemispheres. Since writing the above I find that Professor M. Schiff, of Florence, has caught the same idea, when he says in his monograph on "Motor Centers" that "human and comparative pathology have stated with

certainty that the motor centers do not extend above the base of the brain." Unless my attempt to be brief has led to ambiguity, it will be seen that among the probabilities of this obscure subject the explanations I have given in defense of the theory enunciated are based on—

I. The radical difference found in the circulation of the blood, both as to mode of distribution and quantity, leading to the reasonable inference of greater functional activity existing in the center than in the circumference of the brain. The more life-action in any part the more is blood supply needed.

II. The want of uniformity in functional results, when definite and alike portions of the cortical substance are stimulated, impaired or destroyed, hence this can not be the seat of so-called motor centers.

III. It would be consonant with pathological and experimental facts to locate these motor and psychical centers in the base and center ganglia, yet in sympathetic relations, being influenced but not absolutely controlled by the cortical substance.

IV. The want of distinctive physiological features in the different convolutions.

I will now give a few examples of brain injury, illustrative of these views. The first are culled from the surgical records of the War of the Rebellion.

Private Hughes, was wounded at the battle of Antietam. The Hospital Reports say that the injury was a perforation of the skull by a single conical musket ball entering near the inner posterior angle of the right parietal and emerging at a higher point of the left parietal, making, after traversing a portion of the brain, a large exit wound. At the time of this extensive injury he dragged himself from the field, but *he did not lose his consciousness.* Eight days after the injury it is reported the general condition of the patient was good; suppuration had commenced; no febrile action existed, the pulse was regular; sleep not materially disturbed,

mind clear, and manifested no signs of compression of the brain, or inflammation of its membranes. When the swelling of the scalp subsided, a prominence of brain substance was found, one inch in height and three inches in length, in which the pulsation of the arteries could be distinctly observed; spiculæ of bone came away from time to time, and the tumor subsided within the cranium. On December 20th, 1870, or over eight years after the injury, he was examined by two medical men. Previous to this time he had worked in an iron foundry. His memory remained quite good. He had no paralysis, and it is reported by Drs. Keen and Thomson that it is remarkable to observe the almost entire restoration of his mental faculties, especially in view of the probable deep lesion of the brain, both by the primary injury and the subsequent fungus cerebri.

It will be seen that in this case there was no functional disorder, except that for a short time at first "the brain functions seem clouded." This might be expected for a time.

Private Sheridan, was shot through the left temporal region. The missile lodged in the brain, and was never extracted. At the close of the war he was discharged recovered, and received no pension. No functional disturbance at any time.

Corporal Farrium, wounded by a round ball entering the cranium and brain matter. He recovered and was put in the Veteran Reserve Corps. He was not pensioned. He was none the worse for the wound at any time.

Private Dillon, was wounded by a bullet which entered the cranium very near the superior angle of the occipital bone, and had passed anteriorly into the substance of the brain. He lay on the field of battle two days without any attention. After being a year invalided he returned to active service, perfectly well physically, but with the intellect slightly impaired. Afterwards he was mustered out the service, perfectly well, and was not pensioned. The ball was not extracted. After the first shock there was no functional disturbance.

Private Bemis, wounded by a ball entering a little outside the left protuberance, and passing backwards and outwards. It removed a piece of the squamous portion of the temporal bone, with

brain substance and membranes. When the patient entered the Hospital, brain matter was oozing from the wound. At first respiration was slow; pulse 40; the right side was paralyzed and there was total insensibility. Three days after the injury the bullet was extracted from the substance of the left hemisphere. It was a conoidal ball, and badly shattered. He then rapidly recovered, and the report says that in four months and a half afterwards "the mental and sensory faculties were unimpaired." On October 30th, 1870, he wrote: "I am still in the land of the living. My health is good, considering what I passed through. My head aches some of the time. I am married and have one child. My memory is affected, and I can not hear as well as I could before I was wounded."

These were the only results of this extensive laceration of brain matter. The slight functional disturbance did not correspond with the doctrine of cortical functional centers.

Sergeant Rotherham, wounded at Gettysburg by a musket ball, which penetrated the skull near the right frontal eminence, passed directly inwards and lodged somewhere on the membranes or in the brain substance. The opening through the bone was similar to that made by a trephine, and the track of the ball could be followed on the *dura mater* with a probe for a considerable distance, as that membrane was detached from its natural connections with the skull. The ball was not extracted. There was no perceptible loss of power, motion or sensation on either side of the body. There was no arterial excitement. His recovery was rapid, and five weeks after the injury he was furloughed for fifteen days, at the expiration of which time he returned to duty, having suffered no inconvenience from the journey. After this several bones exfoliated, but his mind was not impaired to any perceptible degree. For some time after the wound was received he was assigned light duty in the Veteran Reserve Corps Hospital.

Lieutenant Brown, at the battle of Wilson Creek, received a penetrating gunshot wound of the cranium and brain. The ball was not removed for seven years after the injury, but in a few days after being wounded he was fit for duty. In January, 1871, this officer was on duty as Captain in the 13th Infantry.

Private Stallman, wounded at Winchester by a musket ball, which entered at the right temple and emerged at the opposite

side of the head. In spite of this serious lesion of brain, in a few months he was put on light duty. He had no strabismus, and we are told that although his mental faculties were slow and uncertain, and his memory impaired, he had no mental hallucinations nor mental aberrations. The year following the injury he was pensioned. No functional impairment except the above-mentioned.

Private Haggart, was wounded by a conoidal musket ball, which struck the left side of the head, and passing through carried away a large part of the left half of the occipital bone. At first he became insensible and lost more than an ounce of cerebrum, leaving bare the meningeal artery. Seven months afterwards he was discharged from the Hospital. At that time both eyes were dilated, causing dimness of vision, but his intellect was good, and he could read very coarse print. He died four years afterwards, but it is not recorded what was the cause of death. This extensive lesion only produced these slight results.

Sergeant Woodman, was wounded by a gunshot missile, which entered above the left frontal eminence and emerged at a point one inch behind the upper margin of the right ear. He was unconscious for several hours. At the wound of exit eight small bones afterwards discharged. He was alive three years afterwards, and it was reported that the organs of special sense and the intellect were unimpaired.

Private Plumly, was wounded by a conoidal musket ball, which entered at the inner angle of the left eye and after passing through the brain substance it emerged behind the left ear. On March 7th, 1867, nearly three years after the wound was inflicted, he was in good health and a pensioner. The only physical results were obscuration of the vision of the left eye for a short time, the discharge of pus from the orifice of entrance of the ball and through the right nostril and upper part of the posterior nasal cavity into the mouth.

Private Sechler, was wounded by a conoidal ball, which struck the *os frontis* over the right eye and passed into the brain. He not only lived, but returned to duty six months afterwards, and was at the close of the war mustered out, so well that he did not even receive a pension. The ball was not extracted. No functional results.

Private Samuel D. Solomon, was wounded at Bull Run, August 27th, 1862, by a carbine ball, which struck at a point two inches

behind the tip of the left ear. The missile entered the brain to the extent of two inches, and was not extracted. When struck he fell to the ground, but retained his consciousness. Healthy suppuration followed, and a fragment of bone was discharged from the wound. He suffered headache, and also from acute darting pains across the base of the brain, from the right temple to the scar of the wound. No paralysis existed, and the functions of the body were generally well performed. He afterwards served in a Washington Hospital in the capacity of nurse, and was discharged from the service in the subsequent year, with no record of mental unsoundness or functional disability.

Corporal Wood, wounded at the battle of Winchester by a conoidal ball, which fractured the occipital bone and entered the brain. This was September 19th, 1864. He was examined by a Confederate Board on March 24th, 1865, whose members recommended that he might be employed at some post where the duties were not laborious, showing that his mental faculties could not have been impaired to an appreciable degree. No functional results were seen.

Private Sheridan, was wounded at the siege of Vicksburg by a canister shot. The missile entered the left parietal bone, immediately posterior to the coronal, and three inches from the sagittal suture, passed horizontally inward, a distance of two and a half inches, and lodged. The ball could not be extracted. He suffered but little inconvenience. The wound suppurated freely, sometimes bled, and small fragments of bone escaped. Six months after he was placed to work on the levee, and experienced no trouble except on the approach of a storm, when he had a dull pain and sensation of weight. In eight months after the wound was received he returned to duty.

Lieutenant Lilycrantz, wounded at Fort Pulaski. The ball perforated the *os frontis* over the right superciliary ridge. When first seen after the injury he was vomiting freely, and about a fluid ounce of brain matter had exuded from the wound. A probe, five inches long, glided easily, by its own weight, its full length, directly backwards through the wound, without coming in contact with the ball. For ten days the patient showed a tendency to sleep, but was easily aroused and would converse freely, constantly wandering, however, from the topic of conversation. He could, at this time, neither taste nor smell, and his hearing and sight were

much impaired. He recovered his mental faculties to such an extent as to be employed in government service at Washington, and died five years afterwards. During this time he articulated distinctly, had no paralysis, but had occasionally slight attacks of epilepsy, but they were becoming slighter as time wore on.

I have culled these cases out of 559 persons who received penetrating or perforating fractures of the skull. These 559 were selected out of 4,350 cases of gunshot wounds of the cranium and its contents. Of that large number, many were afflicted with functional and mental disturbance, but in no two cases of similarly injured, were there like results.

Dr. Van Peyma gives a record of a singular case in the *Buffalo Medical and Surgical Journal*, December, 1873.

A man aged 50 was found comatose, and brought to the Buffalo General Hospital. He subsequently was sufficiently roused to give his name and age. He died six days after admission. On *post mortem* examination the meninges on the right side were found considerably congested. On removing the brain a collection of pus was found at its base, extending from the medulla oblongata forwards. The lateral ventricles were also found filled with a purulent collection. At this moment, as the incisions were being extended, something was heard to fall on the tray on which the brain was lying. To our utter amazement this was found to be a bullet. The ball, which was of small size and considerably flattened, had been liberated by the knife. The conviction was forced upon us, (says the surgeon,) that the external opening through which the ball had passed had been overlooked during the life of the patient, and that this was the real cause of death. But our astonishment was increased when, after a careful examination of the surface, no opening could be found. As a last resort, the cranium was examined from the interior, and on the anterior surface, above and a little to the right of the left orbit, was found a fracture of the frontal bone, the internal table of which was extensively fissured. With this as a guide, we again made search for the external aperture, and again failed in finding an opening, but finding a discoloration of the skin over the seat of the fracture, of a lead color, circular in shape, and the size of a ball. There was not the least sign of a

wound, or the slightest scar. The wound, which must have existed, had healed perfectly, and left nothing but this leaden discoloration to show its former presence. The course of the ball through the brain could still be traced by a probe to the place where it had lodged near the anterior surface of the medulla. The opening in the bone was filled in with a gelatinous material through which a tenaculum passed readily. There was no previous history of the case, but it was evident that the wound had been inflicted a considerable time before death, and seeing the patient had not found refuge in a poor-house, hospital, or asylum, the inference is fair that the intellect had not been much impaired, if any, up to the fatal attack. I am the more ready to think so, from the immunity enjoyed by patients similarly afflicted. There could not have been serious functional results, as he had been able to look after himself. The probabilities are there were no physical results.

A somewhat analogous case is recorded by Dr. Prewitt, of the City Hospital, St. Louis, (*St. Louis Medical and Surgical Journal*).

A man aged 32 shot himself with a pistol. The ball entered the forehead about an inch and a half above the supra-orbital ridge. He recovered in a little over a month, and *without marked impairment of intellect.* He died eleven months afterwards from erysipelas. No functional impairment is mentioned.

Assistant Surgeon P. F. Harvey, U. S. A., reports the following case, (*vide American Journal of the Medical Sciences*, July, 1879). It is that of an Indian Agency physician, who received a Winchester rifle ball three inches and a quarter above, and one inch behind the right external auditory meatus. The missile took a transverse direction, across both hemispheres, toward the left supra-orbital convolution. A grooved director was easily passed in this track, a distance of five inches, without, however, reaching the ball. The patient did not lose consciousness on being wounded, and complained only of "seeing stars," and of some confusion of ideas. He recovered so rapidly that after five days of convalescence he took a journey of ninety miles, in

December, in an open buggy, alighting several times to make his way on foot through deep snow drifts. At the end of this exertion, however, two convulsions occurred, and the wound in the head re-opened. In a short time complete convalescence ensued. Six months after the wounding, the patient traveled across the plains to his home in Indianapolis, and on his arrival reported himself in excellent condition.

Dr. Hopwood, of Ashton-under-Lyme District Infirmary, England, gives, in the London *Lancet*, an account of a case under his care last summer.

A male patient, aged 28, was engaged in removing the center support of the arch of a brick kiln, and before he could get out of the way the arch fell, burying him and several others in the ruins. All the bones of the face were crushed in, and among other injuries the coronoid process of the lower jaw was broken off, and there was a depressed fracture of the temporal bone, just above the zygoma, from which the brain protruded to about the size of a strawberry. The coronoid process of the lower jaw, and the zygoma, were removed, the protruding brain matter was shaved off, and the temporal bone elevated. Temperature at this time was 99° Fahrenheit; pulse 62. The patient was perfectly sensible when brought to the Infirmary, and thought he was only slightly hurt. There was no shock, nor had there been any. The pupils were perfectly regular and there was no paralysis. There was no mental disturbance at any time, and ten days after the injury he said "he felt as well as ever he did in his life." The injury was inflicted on 30th July, 1879, and on October 14th, following, he was quite well and working regularly.

John MacEvoy, of Paterson, N. J., a lad of fifteen years of age, was gathering saw-dust in a saw-mill, last December. He had crawled under a circular saw, going at a speed of 2,500 revolutions a minute. The saw was twelve inches in diameter and nine inches of this was under the table. Becoming startled by a noise the boy suddenly raised his head, bringing it in contact with the saw. The saw had made a clean sweep from

the upper part of the frontal bone to the right side of the nose. The right upper eyelid was completely severed, but the eyeball was untouched. The cut was three-sixteenths of an inch wide, and the edges of the wound were smooth. The boy was able afterwards to walk, and told how the accident had happened. He appealed to the physician to save his life, saying that he did not want to die. During the dressing of the wound the boy straightened up several times, and the physicians were obliged to tell him repeatedly to lie still; he obeyed as readily as a well person would and understood what was required of him. He took in his hand a glass of whiskey which was given to him, which he drank without assistancce. The accident happened on Monday, and during the week his intellect remained unimpaired until Saturday, when convulsions set in and he died. No *post mortem* was allowed by the parents, so the exact extent of the injury could not be ascertained. No functional impairment was seen until the boy was dying. Taking the extent of the surface wound as a basis of conjecture, or speaking mathematically, calculating the segment of a circle, the deepest serrated rim of the saw must have entered at least two inches into the skull and brain together. The cut was as clean as if done with a sabre, and was no doubt done almost as rapidly. Towards the end paralysis set in, but, strange to say, the medical men differed as to which side or limbs were paralyzed. Dr. Quin, the Chief Surgeon of the hospital where the boy lay, gives another case which came under his notice years before. There was a boy named Murphy, who fell out of a window of considerable height, upon the curbstone in the street. He struck it with his forehead. When he was picked up more than a teaspoonful of brain matter oozed out of his head. He got well physically and mentally, and

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lived to be twenty-two years old although he was only five years at the time of the accident. There was no paralysis.

Of another case the doctor says: "There is Joe. Murphy, you may see him almost any day walking round the streets here. He is lame and drags one foot a little. One day in 1864 I was going along the street, when some people came running after me. I went into a basement and found Joe. Murphy had been shot in the right eye, two minutes before, with a bullet 38.900 calibre. I probed the wound and found the bullet flattened against the back of his skull. It is there yet. But Joe. got well, *and his mental faculties are unimpaired.* I've been intending to make a *post mortem* examination of his head, but I begin to think the old man will outlive me."

In the Canada *Lancet*, of April, 1872, Dr. T. R. Dupuis, of Kingston, Ont., states the case of a boy who had been injured by a fall from a horse while going at a rapid rate. The lesion was a compound fracture at the middle of the superior portion of the left parietal bone, with considerable laceration of the brain. The broken piece of bone was nearly an inch and three-quarters long, three-quarters of an inch broad at one end and three eighths of an inch at the other. One edge of this piece was driven down into the brain in such a manner that its surfaces occupied a position perpendicular to their original situation, while the other edge remained *in situ*, being still attached to the solid bone by the *dura mater*, which formed a sort of hinge, upon which the fragment turned. The history of the case states that the injury had been inflicted by the sharp edge of a stone. After exploring the wound with the points of the fingers, which passed in readily to the depth of half an inch or more, the fragment was

extracted by means of a forceps. Nearly a tablespoonful of brain substance was lost. At first the patient was comatose. This state continued for two days. At the end of the second day he had lucid intervals. On the third day consciousness began to return, and with it voluntary motion. At this time the wound was discharging disintegrated brain matter mixed with grumous blood and pus. Thirteen days after the accident the delirium was gone, but the mind was fickle, the temper irritable and capricious. Without entering into the whole history of the case as given, it may be said, the Doctor adds, "a month after this lesion had taken place all effects of this severe injury had passed away, except a slight puffy appearance about the face, a little clumsiness in his movements and some irritability of temper." Since that time he became as healthy and strong as he ever was. The patient was closely watched during the course of his illness, but the Doctor failed to detect any morbid mental manifestations that seemed to indicate injury to any distinct phrenological development. It will be seen that no disturbance of functions took place commensurate with the injury, nor were they such as would be expected by the school of cerebral localizers.

In the Montreal Hospital Reports of 1879 we have two cases recorded. The first is a case of a wound inflicted by a swiftly revolving circular wood-saw. It produced a serious lesion in the central part of the first and second frontal convolutions on the left side. The skull wound extended in an oblique direction from above the outer angle of the left orbit across the frontal, through the anterior superior angle of the right parietal and terminated about the center of this bone. It had penetrated through the membranes, and at the central part the brain substance was lacerated and ex-

posed, and could be seen pulsating. The *post mortem* revealed a large rent extending from the longitudinal sinus downwards and outward to a point a little anterior to the beginning of the fissure of Sylvius. The central portions of the first and second left frontal convolutions were completely destroyed. The patient was unconscious for about ten minutes after the accident, but when taken to the Hospital became *quite conscious*, and at that time had no paralysis, nor are we told that either one or the other supervened before death, which took place two days after the accident.

In the same Hospital Reports the history of a second case is given. A young man, aged 22, was accidentally shot by the discharge of a pistol. The bullet entered the skull above and a little in front of the right ear. From the first he was perfectly conscious, *not paralyzed*, and gave a rational account of how it happened. A probe was inserted into the wound, and it passed freely into the frontal lobe in the course of the bullet. Pulse 60. No elevation of temperature. The accident happened March 8th, and he died of consumption August 12th following, but between these two periods there was no unusual mental disturbance. Without giving the details of the autopsy suffice it to say, that the bullet entered the brain substance in the right inferior frontal convolution, just in front of the ascending branch of the Sylvian fissure. From this point the course of the bullet was upwards and forwards, passing out at the inner surface of the frontal lobe and lodging between the brain substance and the falx, where it lay surrounded by a firm membrane. A firm membranous canal marked the course of the bullet, and the brain substance about this was somewhat softened. This extensive destruction of brain tissue did not disturb the mind.

M. Flourens, of Paris, some years ago experimented on animals, not only to show the curability of brain substance, but also to demonstrate how much brain tissue can be injured without the untoward physical and mental results formerly apprehended and dreaded. He trepanned the skulls of dogs and rabbits, made a small opening in the dura mater and into the substance of the brain, and then put bullets into the wound' These bullets gradually penetrated through the cerebral matter by their own weight. When the ball was small, he found that the whole thickness of the lobe of the brain or of the cerebellum might be traversed by it without occasioning any symptom, or disturbance of function. The fissure made by the passage of the ball remains for some time as a canal; it then closes up and cicatrizes. (*L'Union Médicale*, 1863).

Dr. Thomas, surgeon to St. Bartholomew's Hospital, London, gives in the *London Lancet* of January last, an interesting case, in which the patient made a good recovery without loss of mental or physical power. A man thirty-five years of age, shot himself with a revolver through the head. The bullet passed in at one temple and out at the other. Half an hour after the accident the pupils were found to be natural, pulse feeble, and respiration natural. The patient was quite conscious, and answered questions correctly concerning his name, age, and address, and of his own accord. He was an educated man and spoke in German, but when addressed in either French or English he would reply in the corresponding language. He showed no signs of mental incapacity, nor was there any loss of motor power. He vomited a good deal at first, and at that time blood and cerebral substance were forced from the wound in the right temple. For several days he became quite irritable, and had a few delusions, but no functional depriv-

ation. On the forty-third day after the wound was inflicted he became quite well. At first a probe was passed its whole length into the wound and across the head without meeting the slightest resistance. At first the special senses were very slightly impaired, but all recovered their tone before he left the hospital, except the sight, which was slightly impaired. As regards the course of the bullet in this case, Dr. Smith says: "It is certain, from the position of the apertures of entrance and exit, that it entered the outer surface of the anterior lobe of the brain, a little above the level of the highest part of the roof of the orbit, and that it emerged from the left anterior hemisphere at a spot rather farther back and at a slightly higher level." From the large effusion of blood in both orbits, which so rapidly followed the injury, there is reason to believe that in its passage across the skull the bullet fractured the roof of both these cavities. From the free and persistent epistaxis, it is probable that the cribriform plate of the ethmoid or some part of the roof of the nasal cavity was broken into, while there was evidence, from the symptoms, that the olfactory bulbs did not escape disturbance or injury. It may be said that there is no direct proof that the left hemisphere of the brain was wounded at all, that the bullet may have run over the roof of the left orbit and up the inside of the skull to its point of exit from the bone. The surgeon is sure, however, that the probe traversed, without any sensation of resistance, both hemispheres, and one would think it impossible that a bullet of the size and weight indicated, after passing through one side of the skull, could have knocked a piece of bone clean out of the opposite side unless it impinged upon the inner surface of the bone in a direct line. As further proof pulsation and respiratory movements were observed in the blood tumor

over the aperture of exit, and these were so forcible as to indicate that the interior of the brain was in direct contact with the ecchymosis. It is certain that the part of the hemishpheres that was damaged was the anterior frontal portion just above the orbits. Has this part any functional center? If so, where is the evidence of its being necessary, seeing that both frontal lobes were injured seriously, without any immediate results in proportion to the lesion inflicted? Is this an organization put in more to fill up, than to be of use to its neighbors? I had the impression nature had no garret filled with useless furniture. Some functional centers must have been badly broken up by this destructive intruder.

About seventeen years ago I was called to visit a boy, aged thirteen, who had been kicked by a horse. A section of the skull was crushed in on the right side, near the median line, in the upper part of the frontal and parietal bones. One of the nine pieces fractured and detached from the surrounding bone, had been driven into the substance of the brain, over an inch in a perpendicular direction. The membranes were lacerated very much, and brain substance, within a few grains of an ounce in weight, protruded through the wound much broken up, some of it hanging down upon his cheek. At the time I first saw him he was comatose. I extracted the bones; cut away the ragged edges of the membranes, and the lacerated brain substance. Consciousness returned immediately. His temperature remained normal; his pulse did not rise at any time above 96; he did not lose a night's sleep nor a meal after the evening of the accident. No febrile symptoms intervened; there was no paralysis, nor perversion of any of the organs of special sense; there was no difficulty in speaking. A large cavity remained.

He afterwards went to school to the same mistress as before, and she informed me that with the exception of a certain irritability of temper when thwarted, (which he did not possess before), he was as intelligent as ever, and could learn his lessons with his usual aptitude. This was especially noticeable in mental arithmetical exercises. He was under my observation for several years after the accident. After he was aroused from his comatose condition consequent on compression, his special senses were unimpaired; his locomotive and grasping powers normal, and his bodily health good in every particular.

These examples might be indefinitely extended. Medical literature is full of evidences of destruction to the brain matter of the cerebrum and cerebellum without any serious impairment of mental power or physical function. Let a brain be taken and wires passed through it to indicate the course of the missiles in these cases I have mentioned, and it will be seen that brain substance has been injured in almost every conceivable direction, yet, with no physical or mental results at all commensurate with the lesions inflicted. If these parts are motor centers, then have we the miraculous phenomena of organic operations without an organ—of varied and distinct functions without a motive power, and of uniform results without an efficient cause. Were we even to consider the brain a dual organ the difficulty would remain, where corresponding sides are simultaneously injured. In all the dual organs of the body we find, sudden injury to one is always followed by imperfect work in its fellow, until time is given to allow provision to be made for the extra labor imposed. When we find no impairment in function consequent on destruction of *one* so-

called motor center, we are led by uniform analogy to doubt a doctrine so anomalous and contradictory. At least it is best to accept with caution a theory which is being accepted based upon exceptional examples, and which does not account for the physical results except in isolated cases. The mental effects seen, as consequent upon brain injury, would prove too prolific a theme for present investigation.

THE STRUCTURE OF THE VESSELS OF THE NERVOUS CENTERS IN HEALTH, AND THEIR CHANGES IN DISEASE.

BY THEODORE DEECKE.

VI.

In part four of this article,* attention was called to structural alterations in the capillary system of the grey cortex of the brain, which, although presenting appearances of pathological change, may occur, without being necessarily connected with any noticeable functional disturbances. They were claimed to be the result of processes, which in their nature stand at the very border of physiological and pathological conditions. From the microscopic appearance of this structural change, I propose to call it the *callous* degeneration of the capillaries. It is marked by a peculiar kind of swelling and induration, which the endothelium cells undergo, concomitant with irregular dilatations of the vessel and, at some places, with an occlusion and cutting off of the branchlets thus affected, from the general circulation. As these conditions of capillaries are also found in the brain of persons with no previous

* January, 1880.

history of disease, who died accidentally, in apparently good health, I consider them pathologically of importance only in proportion to the extent in which they are found in any given case,* or when with them, other lesions or other evidences of morbid processes in the organ are observed. More recent investigations into this matter induce me to fully sustain this statement.

In the following pages I confine myself to their appearance in the cases last mentioned. From the material before me I select, as illustrations, two remarkable cases, in which the most frequent occurrence of these lesions was concomitant with extensive capillary embolisms. In both cases there were marked febrile cerebral symptoms; an acute delirium with a high degree of maniacal excitement. Temperature fluctuating from 102° to 104° Fahr. Pulse varying between 94 and 120, in an inverse ratio to the rise of the temperature. Lips and mouth dry; tongue dry and cracked. Respiration 20 to 24, at times shallow, with heavy breathing. Pupils small, at times not responding to light. Face and extremities at times purple, cyanosed. Death occurred in coma. In both cases the disease was of short duration, viz.: eleven days in the one, thirteen in the other. The age of the one patient was sixty-five, of the other thirty-five; the one died on the first day, the other on the eighth day after admission.

At the autopsy in the first case, the kidneys were found congested, and the spleen much enlarged. The heart was fatty. Both lungs were congested; the lower lobe of the left lung consolidated, and on section of a peculiar dirty, in some portions, greyish brown color. The left pulmonary vein was almost completely obliterated by a thrombus, one and three-quarters of an inch in length, which had undergone partial decay, and about

* See Article IV, January, 1880.

two tablespoonsful of a white, creamy matter escaped from the vessel after dissection. The thrombus was not of very recent formation; it was laminated, and consisted of concentric red and grey layers, formed by accumulations of red and white blood corpuscles. There was no further organization of its elements, but the greater part of it was solid, and firmly adherent to the inner wall of the vessel. At its termination, the thrombus presented a yellowish grey color, and was of cheesy consistence. The pulpy or creamy matter collected from the vessel was composed of a finely granular debris, which contained an immense number of spherical bodies, formed of micrococci. Sections through the enlarged spleen showed the intra-vascular chords or the lymphoid parenchyma of the pulp, thickly packed with pigment masses. The blood was of neutral reaction. The proportion of white and red blood corpuscles, in an average of ten separate examinations, was as one to three hundred. Here and there white cells were observed of two and two and a half the diameter of an ordinary white blood corpuscle. Hæmoglobine 10.[47] per cent. Samples of blood taken from the cavities of the heart, the lungs, the liver and the kidneys, showed an admixture of a finely granular detritus, and of globular masses of micrococci, from the size of a small red to that of a large white blood corpuscle.

Microscopic sections through the affected parts of the lung showed a catarrhal bronchitis and a catarrhal pneumonia in the lower lobe of the left lung. The alveoli of the consolidated portions of the lung were, to a large extent, infiltrated with micrococci, in the majority of instances densely packed with these bodies.

When the encephalon was examined, it was noticed that the dura mater was very hyperæmic. The longitudinal sinus was very firm to the touch, much dilated

at its central arch, and, like the veins emptying into it, filled with solid blood and fibrin coagula. They did not, however, firmly adhere to the inner wall of the vessels, which appeared to be intact after removing the clots. The inner leaf of the dura mater was here and there slightly ecchymotic, and presented fine, yellowish red punctations. The pia mater, over both hemispheres, showed a high arterial and venous congestion; at the base of the brain, over the medulla oblongata and the pons, it was remarkably pale and anæmic. A closer examination of the supplying arteries at the base, and their contents, revealed the presence of micrococci and a granular detritus-like matter in the carotis interna, in the middle, in the anterior and in the posterior cerebral arteries, and in the anterior and posterior communicans. None of these vessels were, however, occluded. The brain, on section, in almost all its parts, exhibited a tinted appearance of the grey cortex and the puncta vasculosa in the centrum ovale. There was a bloody serum in the lateral ventricles; but nowhere hæmorrhagic foci.

Microscopic sections through the convolutions of the brain showed most extended capillary embolisms, especially marked in the temporal lobes, in the anterior and posterior central and the ascending parietal convolutions, and by far more frequent in the left than in the right half. There was, however, no part of the brain found entirely free from emboli. The substance of the emboli was more generally of a fibrinous than of a fatty nature, yet in the fibrin-coagula of the arterioles and larger and dilated capillaries globules of micrococci, and accumulations of a granular matter were most frequently found; in other instances the embolic masses were densely beset with fine prismatic crystals of hæmatoin. Of the nervous elements the pyramidal cells of

the second layer only of the convolutions, most affected, and some cells of the corpora striata and the optic thalami had undergone a cloudy swelling, and were of glassy appearance, so that the nucleus of these was rarely outlined. Yet, there was, aside from this, another pathological element present, of which I will speak further on. In this case, the affection had apparently originated in the respiratory organs. The history of the case is, in short, the following: The patient was a sailor, single, sixty-six years of age. Had been in a Sailor's Home about twelve years and was always steady and correct in habits. About two weeks and a half before admission, when he was visited by friends, he was allowed to accompany them to a neighboring village, where they gave him liquor and indulged in excesses. He returned intoxicated, and sick from unusual exposure, and was for this offense deprived of certain privileges, from which time he appeared to labor under some mental depression and excitement. Four days later, while in chapel, in the midst of the sermon, he arose and asserted, with great emphasis, "I am God;" repeated this assertion and said that when he was dead the sun would never rise again. After this he continued to be very delirious. Ten days later he was brought to the asylum in restraint, hands tied together with a rope. In office was, at times, very loud and demonstrative; paid no attention to anything said to him; then again sat with head down muttering to himself; then started up suddenly and with eyes fixed on the wall shouted incoherently; was thin in flesh, haggard, and appeared very sick and feeble. Pulse 84. Temperature 102° Fahr. He died twenty-four hours after admission.

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and acute insanity. There was, undoubtedly, a delusion, preceded by a state of mental depression and excitement; yet, this appeared to be entirely covered up by a general confusion of ideas—a symptom so frequently associated with sudden attacks of acute febrile diseases. And, taking into consideration the rapid course of the disease, it seems to be impossible to decide in favor of the one or the other interpretation. Etiologically, two important factors were present—a physical, the excessive use of liquor and the exposure which created a bodily disease; and a psychical, the mental depression and excitement originating in the consciousness of the offense committed, and of the fact of being, therefore, deprived of certain privileges, two things, apparently, of great weight in the life of the individual. Anatomically, there was a severe affection of an organ, essential to physical life. The peculiar pathological nature of the affection was such that its germs spread out rapidly, and were carried into all parts of the circulatory apparatus. The condition of the blood was altered, and the lack of a proper nutrition and a normal change of matter interfered directly with the normal functions of all organs of the body.

The first physiological effect perceptible, was, undoubtedly, a general stasis in the venous system, associated with an arterial engorgement. There was, then, an occlusion of the smaller nutrient vessels by emboli, and, consequently, as the first pathological factor, a back flow of the blood in the districts supplied by terminal arteries, in Cohnheim's sense. This must have been especially of importance in the brain, the organ which here comes before all the others, into consideration, where this system is most prominently developed. Since we know, by direct observations, that in such cases, the checked blood-current empties through the nearest

unaffected artery, into the veins, this must have greatly added to the stasis and the engorgement in the latter, and must have produced dilatations of the veins, morbid conditions which were found so well pronounced at the autopsy.

It will be seen from the foregoing, that in this case, all the circumstances were present, which would favor the development of inflammatory processes in the districts affected, viz: the diapedesis of white, even of red blood corpuscles, or even actual hæmorrhages. Of the latter two, there were, however, no evidences detectable. Concerning the diapedesis of the white corpuscles, it must be admitted that its demonstration in the tissues of the nervous centers, especially in the grey cortex of the convolutions, is connected with peculiar difficulties, since we have no means at disposal, of distinguishing the white corpuscles from lymphoid cells, or from the nuclei of the neuroglia. In the case before us, however, and the observation dates as far back as 1876, I have detected the presence of elements in the tissues affected, which are unquestionably of pathological nature, and seem to be evidences of the existence of diffuse inflammatory processes connected with capillary embolism. This would be quite in conformity with the suggestion, first made by Charlton Bastian, of the possible relation between febrile cerebral symptoms and capillary occlusions. From my own observations during the last four years, I can add four new cases to the one related, which I selected for communication, on account of the clearness of the clinical picture, and of the etiology, the anatomy, and the physiology of the disease. In the second case, mentioned in these pages, and which will be described further on, the anatomical condition was diagnosed, and the correctness of the diagnosis established by the autopsy.

The elements, referred to above, upon the presence of which, anatomically, the theory of the existence of diffuse inflammatory processes, associated with capillary embolisms in the brain is based, are peculiar cells or bodies, found in large number in the tissue of the parts affected, corpuscles of various size, up to the one-five-hundredth of an inch in diameter. They are globular, round, elliptic or oval, smooth bodies, perfectly transparent, yet slightly refracting the light. If the latter was not the case, they could easily be taken for hollow spaces. Inside these bodies, there is, at all times found, enclosed like the nucleus in a cell, a white cell or corpuscle. It is an interesting fact—and in consequence of this only are these bodies detectable in the tissue—that in fresh specimens, viz: sections through the fresh brain, neither the substance of these bodies nor their nucleus, or the white cell in the center, imbibes the color from the carmine solution. They are thus distinguished from the nuclei of the neuroglia, the ganglion cells and the lymphoid cells, which all become more marked by taking up the color. Under all circumstances, however, they are easily overlooked; yet, even in stained sections through the hardened tissue, they can be made out when the attention is directed to them. Since the bodies are, as stated, on the average, of considerable size, the sections, of course, should not be too thin; in which case, they would present the appearance of an empty space.

Now, my theory as to the origin of these bodies in the tissue is, that they are migrated white corpuscles, surrounded by a peculiar gelatinous protoplasmatic substance, and that the whole represents a new formation, as the product of an inflammatory process. The protoplasmatic envelop being of a different nature from the ordinary cell protoplasm, protects the white cell

PLATE I

THEODORE DEECKE, DEL.

or the nucleus from becoming colored, when placed in the carmine fluid; it does not resist, however, the action of the iodine solution, which colors the nucleus dark—the protoplasmatic envelop light yellow. In plate I, figs. 8 and 9, I give as good a representation of the bodies in question, as possible; the peculiar slight refracting power of the protoplasm or gelatinous envelop, of course, can not be illustrated.

Another remarkable anatomical feature in the case before us, was the frequency of the above mentioned callous degeneration of the capillaries. This alteration of the capillary endothelium is, as it seems, always the result of an obstruction of the circulation in the vessel, although not always that of an occlusion by an embolus. The latter may just as well, according to circumstances, be followed by necrobiotic processes, the disintegration of the vessel and the transformation of the nuclei of the endothelium into granule cells; or by an entire dissolution and necrosis, together with the surrounding neuroglia and nervous tissue. Of these two, the one is more frequent in, or in the neighborhood of hæmorrhages foci, the other in cases of the entire cutting off of areas from the general circulation, by the occlusion of a larger supplying artery. In capillary embolisms, the fatty fur, especially around the nuclei of the endothelium cells, (see plate I, figs. 1, 2 and 3,) is the most frequent occurrence. Besides this, however, the so-called callous degeneration seems to play a role of some importance, of which illustrations are on the same plate, of the appearance of single branches, as well as of anastomosing vessels, figs. 4, 5, 6 and 7. Yet, I may be permitted to add, that they are not presented here as anything new, but as an anatomical fact, which has, as it seems, not fully received its due consideration and interpretation.

The history of the second case was, briefly, as follows: A man, 35 years of age, of good habits, active in business, and in apparent good health, while traveling on business in a western State, went to bed in the hotel, where he was stopping, without complaining, or anything peculiar being observed about him. In the night a noise was heard in his room, and he ran down stairs and into the street in his night-clothes. He was followed and returned in a state of delirium and declared that persons were pursuing him. It was found that he had knocked the panels of the door out with his chair, and thus escaped. After being sent the following day to the business house for which he was acting, he, being most of the time in a comparatively quiet and rational, though at times delirious state, insisted on adjusting his accounts, which he did accurately. He soon, however, passed into a state of delirium, and was brought to the Asylum. During the whole of the journey of twenty-four hours, he alternated between a dazed condition, in which he mumbled to himself, and periods of delirium, but did not seem to recognize those about him; and, during all this journey, he at no time slept, neither were they able to give him any nourishment. In the office he was examined by Dr. Gray. He made no responsive reply to any—even the simplest—questions asked him. He then seemed to be in a dazed condition, muttering to himself and looking about the room. His mouth and tongue were dry, temperature 102° Fahr., pulse 100, the pupils slightly contracted; his hands in more or less constant motion, attempting to take off his coat, picking at his clothes. He continued in this condition about four days, when the delirium became less, and although he was quiet, he had no appreciation of his state, and made no response in answer to any questions. On the evening of the fifth day, he

began to breathe more slowly and to show signs of stupor, but could easily be aroused. At the same time his face and extremities were purpled, the pupils contracted and did not respond to light; the temperature the same. After a few hours this passed off. On the following day, he again passed into the same state of semi-consciousness, with the same general manifestations, and so continued for some hours, with a rise of temperature to 102 4-5° Fahr. On the seventh day he was lying quiet in bed, but was still incoherent and confused; pupils small, but responding to light; face less blue and congested; respiration 20; pulse weak, 120; temperature 102°; the lips and tongue dry and cracked. Late in the evening he passed again into a semi-comatose condition; was not able to swallow anything; face and extremities were cyanosed; respiration 24, shallow; pulse 112; temperature 103.5°. From this attack he could not be aroused, and continued comatose until 4.45 P. M. the following day, when he died. The diagnosis was: Diffuse cerebritis associated with capillary embolisms. The autopsy revealed a dilatation and bulging out of the longitudinal sinus; slight ecchymoses at the inner leaf of the dura mater; a high degree of venous and arterial congestion of the pia mater over the whole convexity of the brain. The temporal lobe of the left brain was soft to the touch; that of the right in a lesser degree, and the same condition was found at the parietal and the lower frontal convolutions. Both lateral ventricles contained a fluid bloody exudation. An examination of the other organs of the body was not made.

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illaries showing fatty infiltration and callous degeneration of the endothelium, and a great number of the cell-like bodies described in the foregoing in the convolutions prominently affected by the capillary occlusion. The tissue bordering the lateral ventricles was infiltrated with red blood-corpuscles, which presented in many places already an altered condition; in others, the recent migrated corpuscles. The infiltration was, therefore, not an evidence of an actual hemorrhage, but of a slow, continuous diapedesis of the blood-elements.

The case, as it will be observed, presents in the main features very much similar to the one related above. Symptomatically there was the same prevailing acute delirium. Etiologically overwork was ascertained as the prominent psychical factor. The physical cause, as we have learned from information later received, was very probably a malarious infection which preceded the attack. The anatomical conditions were in both cases alike even in details.

If we recapitulate, in short, the principal features presented in both cases, we have an acute delirium, so strongly simulating mania that it may at least be said to lie on the border line of true maniacal excitement of the insane; in both, etiologically, a psychical and a physical factor, and, as the anatomical basis, an acute disease associated with a diffuse cerebral affection; in both, a coincidence of circumstances and effects composing the very soil in which acute insanity roots, and from which it draws its nourishment.

ON SOME CHANGES IN THE GANGLION CELLS OF THE GREY CORTEX OF THE BRAIN IN ACUTE DELIRIUM, AND THEIR RELATION TO THOSE IN ACUTE INSANITY AND IN DEMENTIA.

BY THEODORE DEECKE.

In the cases related in the preceding article*—to which I must refer the reader for particulars in order to prevent repetitions—an excellent opportunity was given to demonstrate the existence of palpable structural changes in the ganglion cells of the convolutions in a diffuse cerebral affection, which presented during the short term of its duration, symptoms of a delirium resembling closely the acute maniacal excitement of the insane. It is well known that a great number of authors up to the present time consider the phenomena of delirium, as well as acute insanity itself, as merely functional, and, while they admit that these conditions are mostly associated with grave disturbances of nutrition, and perhaps material alterations in the vascular system, they deny the occurrence of any visible changes in the structure of the nervous elements themselves. This view has been opposed to the experience of Dr. Gray, of Utica, and since my official connection with the Asylum as special pathologist, I have given this question the most careful investigation, and I have in the annual reports described the conditions observed in such cases under the terms of cloudy swelling, of contraction, and of the glassy opacity of the pyramidal

* This Number, page 273.

cells of the convolutions; though I was for some time in doubt concerning some of the anatomical details of these conditions. It was furthermore desirable to study the objects in situ, if possible, without changing anything; and to avoid the use of agents which, by chemical action, could be suspected of producing changes in the tissues. There was also some ground to expect alterations in these most delicate structures from the cessation of the chemical and physiological processes of life in the tissues. In order, therefore, to take all this in due consideration, I have delayed the publication of observations made some time ago until by a broader experience I should be able to demonstrate the correctness of the results obtained.

The best results are obtained from the immediate examination of the fresh brain tissue. With a sharp knife, kept wet with water, to which a small quantity of glycerine has been added, or even directly in this liquid, microscopic sections can be made sufficiently thin and transparent as to permit the use of all the higher magnifying powers applicable in histological investigations. The liquid in which the sections are mounted is diluted glycerine; and no pressure is allowed to act upon the specimens other than that which the thin cover-glass exerts when of the embedding fluid so much is removed by blotting-paper, that it just fills out the empty space between the slide and the cover. Thus the margin only of the section comes into contact with the fluid, while its surfaces are spread out smoothly on the glass surfaces. In such preparations the vascular arrangement, the distribution of the nuclei of the neuroglia, and the ganglion cells and nerve fibers in their natural appearance and position, are brought to view with great distinctness. The long processes of the pyramidal cells, which extend toward the periphery of

the convolutions, may be followed up to three and four times the diameter of the field of vision of a one-fifth objective. The condition and position of the nuclei and nucleoli of the cells can be clearly pointed out, as also the roots at the base of the cells and their origin. All this, however, will not visibly be altered when the fresh sections are soaked for staining in a carmine solution, to which a little glycerine has been added. They imbibe a small amount only of the coloring material, yet some details of structure may become thus more distinctly outlined. I have, therefore, most frequently in successive sections employed alternately both methods.

Now, if in such preparations in the same field of vision, a certain number of ganglion cells exhibit marked changes in structure and others not, or when in successive sections of certain convolutions changes are observed which are absent in other convolutions, it is evident that these facts admit of but one interpretation. The changes can not have been produced artificially by the action of foreign substances, because there has none been brought into contact with the specimen. There has also no instrument been used to tease the tissue, and no pressure by which the natural condition and form of its elements could become altered. Yet, even if the former had been done, it can not be seen why it should have affected in the same specimen some of its constituent elements, and others not. For the same reason, also, we can not assume that the changes observed were produced in the act of, or after, the death of the tissues. It remains, therefore, only to conclude that they are the result of natural causes, which existed previous to the extinction of life in the tissues; that is, previous to the cessation of the chemical and physiological processes of life.

cells of the convolutions; though I was for some time in doubt concerning some of the anatomical details of these conditions. It was furthermore desirable to study the objects in situ, if possible, without changing anything; and to avoid the use of agents which, by chemical action, could be suspected of producing changes in the tissues. There was also some ground to expect alterations in these most delicate structures from the cessation of the chemical and physiological processes of life in the tissues. In order, therefore, to take all this in due consideration, I have delayed the publication of observations made some time ago until by a broader experience I should be able to demonstrate the correctness of the results obtained.

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We do not have, it is true, any knowledge as to what movements and alterations these most delicate structures perhaps are subjected in connection with the normal manifestations of life, yet there are no indications whatever that they are of other than of a molecular nature, by which, according to ingenerate organic laws, in spite of all interchanges of matter, the individual elementary form is preserved. On the contrary, however, associated with established deviations from the normal interchange, we presuppose that for this change of circumstances, a physical formative equivalent must be demonstrable, and, vice versa, that changes of form and structure can but be a manifestation of the existence and the influence of modified processes of life.

With this we enter into the natural relations between cause and effect, as an association of facts. But in this I am far from suggesting any attempt or effort to explain the nature of the one by the nature of the other. This would be, in my opinion, entirely beyond the limits of scientific investigation. And it appears ridiculous when a third associated element is called forth, the clinical symptoms by which the affection manifests its existence during life, to face the anatomical and physiological facts observed and deduced.

I make this remark because I am aware of the lack of sound philosophical principles, and of the great confusion of ideas in some very pretentious representatives of science, who not only themselves find pleasure in the attempt to explain the clinical manifestations of a disease* from the nature of the anatomical conditions found after death, but who also demand of others to undertake the same task.†

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* This JOURNAL, Vol. XXXIV, page 80; Article, Katatonia.

† *Chicago Journal of Nervous and Mental Diseases*, April, 1880, p. 297: "In cases of *psychical* derangement, not only to *accurately localize* the *disease*, but also to *explain* from the *seat* of and the nature of the *lesions* the *symptoms* which marked the case *intra vitam*."

FIG. 3.

FIG. 4.

FIG. 5.

FIG. 6.

FIG. 7.

FIG. 10.

FIG. 8.

FIG. 9.

FIG. 11.

FIG. 14.

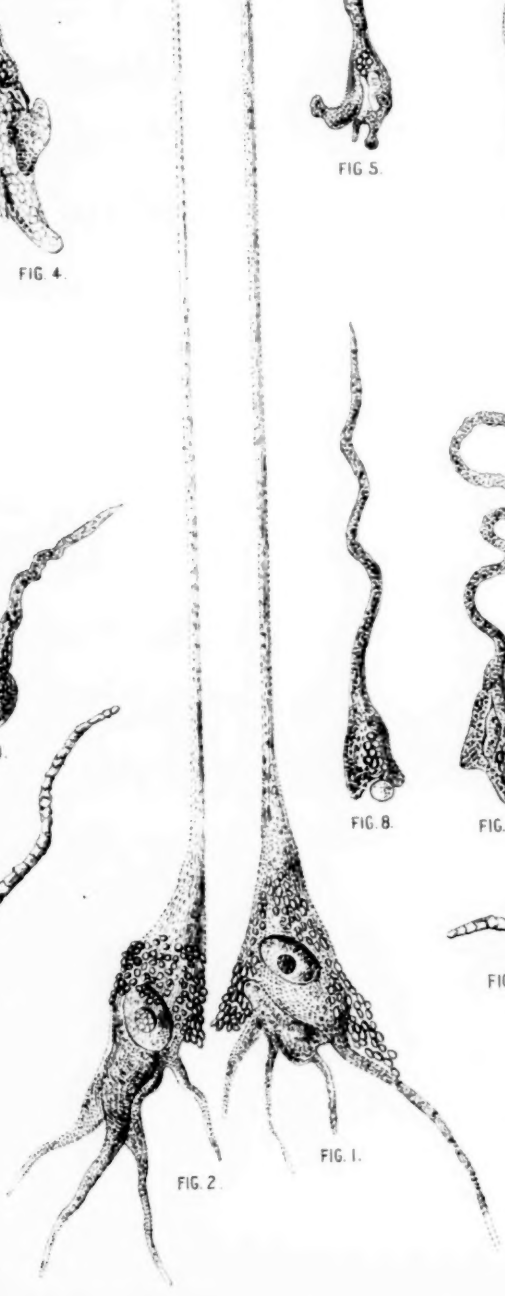

FIG. 2.

FIG. 1.

FIG. 13.

FIG. 12.

THEODORE DEECKE, DEL.

I wish, therefore, to be rightly understood that I do not believe in any such absurd views; to illustrate, who would suggest that the phenomenon of cough is explained by the detection of a morbid condition of the lungs, or of the other air-passages; or, that in a given case the general rise of temperature observed is in any way explained by, let us say, the detection of a discharging abscess somewhere in the body; or, that special phenomena of insanity are explained by the detection of certain changes in the vascular arrangements or in the ganglionic cells of the brain, &c. All such attempts are the results of untrained thought, and of an entire misapprehension of the relations of facts and of the relations between cause and effect in nature. I have sought to collect facts, and to state the phenomena of the associations of the facts observed, and in this sense I would like to ask the reader to look upon the title and the contents of this article.

The first change in the ganglion cells of the grey cortex of the brain from the natural, is noticed in the appearance of a granular or fatty fur, which, like a loose covering, hangs over the body of the cell. It is much like the one referred to in the foregoing article, which lines the smaller vessels. In Plate II, figs. 1 and 2, I give an illustration of two large pyramidal cells in this condition, which are taken from the third layer of the left anterior central convolution. (Case II.) The same lesion, as is well known, has been observed by others, and was described by Voisin,* who gives, however, a very inadequate illustration of it. Occasionally a similar condition may be found in one or more of the convolutions of the brains of persons who have died

* Leçon Clinique sur les Maladies Mentales. Paris: 1876.

without having shown any symptoms of cerebral affection; yet, in cases like those here related, and in acute insanity, they are of so frequent occurrence, exhibiting all degress of the affection, that there can be no doubt as to their pathological character. It can furthermore be shown, that they are more frequent in those parts of the grey cortex in which at the same time marked vascular lesions are demonstrable, like those referred to in the foregoing article, and others which will be described hereafter. As to their origin and meaning, there can, as I believe, be no doubt. The deposits are of a fatty nature, and must, as such, be attributed to a defective local combustion or oxidation, brought about by an insufficient supply of the tissues involved, with arterial or oxygenated blood.

The cells themselves, during this affection, retain, as it seems otherwise, their natural form and appearance; the peripheral protoplasmatic processes and the roots at the base of the cell are not altered, as far as the microscope reveals, and the nucleus and the nucleolus of the cells are distinctly outlined and show no change of position. There is, therefore, no reason to assume that the affection indicates a lesion of a permanent or progressive character, provided that relief is accomplished from the main cause of the condition, the defective nutrition or defective aeration of the tissues involved.

Now, in the progressive stages of this affection, we notice that the parts of the cells which become next involved, are the roots at the base, and probably at the same time, the nucleus. Of an intermediate state between these two, I have not, as yet, had a perfectly clear illustration; and I retain, for this reason, the sketches made, as at present, not decisive. More evidences are, however, on the side of changes in the condition of the roots, as preceding the others. The roots

appear shriveled, contracted or drawn in, somewhat like the feelers of a snail; and in farther advanced stages, they almost entirely disappear.

It may not be improper to remark here, that from my study of the nature of the cells and their processes, I can not relate a single instance in which one of the basal roots was seen to terminate in a nerve fibre, forming its axis-cylinder, as is generally accepted as a fact. This theory, as it is known, is entirely founded upon the supposed analogy of these cells to the great ganglion cells in the spinal cord, and not upon direct observation. Yet, there is neither a physiological necessity for this, nor does it in any way facilitate a better understanding; the prolongations may just as well, in fact, be the central sensitive expansions of the ganglion cells, and the term feeler or antennæ of the cells, may not inadequately be applied to them. Now, this interpretation may be right or wrong; the fact, however, can not be denied that the first, or one of the first structural changes of the pyramidal ganglion cells of the brain takes place in the protoplasmatic processes at the base of the cells, and that the changes appear in the form of a coagulation or contraction of the processes. And this fact seems to be the more interesting, as, undoubtedly, the first manifestations of psychical disturbances point towards some interruption or disorder in the central centripital tracts, or in the sensitive sphere of the central organ. I do not, however, propose to enter, here, into theoretical considerations, which will be made the subject of another article.

I have observed the structural changes at the base of the cells in the two cases described in the foregoing article. These changes are of constant occurrence also in acute insanity, and represent a morbid condition of the nerve cells, which, as we must suppose, under favor-

able circumstances, are capable of restoration. Yet, in farther advanced stages, where the body of the cells and the nucleus begin to participate in the changes, the possibility of this may perhaps be questioned. Figs. 3 to 6 are illustrations of these latter stages. The roots at the base of these cells have entirely disappeared; the protoplasmatic body of the cells is contracted and more solidified, as it seems, than in the normal state. In fig. 3, a fissure in the protoplasm is seen, through which the nucleus projects. In fig. 4, an entire division of the protoplasm has taken place, the lower part shows a finely reticulated structure, the upper is irregularly contracted and dilated, while the nucleus, opaque and altered in form, seems to be at the point of leaving the cell. In both cells, however, the peripheral processes, which are omitted in the drawing, preserved their normal appearance, as shown in figs. 1 and 2, in a perpendicular line, tending toward the periphery. In figs. 5 and 6, varied appearances of the contraction of the cell protoplasm and the nucleus are given. Figs. 7, 8 and 9 are drawings of some further changes, which illustrate more advanced stages. In these, the peripheral processes also exhibit signs of being affected. By an irregular contraction, they become more or less tortuous, are granular, and can not be traced far upward from the cell; here and there they are of a varicose appearance, as in fig. 10; while the cell body itself has passed over into the condition of cloudy swelling.

The most advanced stage of the degeneration of the ganglion cells in acute insanity, at least as far as I have observed, is illustrated in fig. 11, which represents the "glassy opacity" of the cells. Even in this state we may sometimes succeed in discovering a nucleus inside the cell, which, perhaps, indicates that life was not entirely extinct.

From a physiological point of view, we would conclude that at least the stages of change illustrated in figs. 3 to 11, are of such a character that they must be associated, in their progress, with an entire inhibition of function. This complete arrest of function is, of course, not present in the beginning of acute insanity. Yet, it must be remarked that, since all the cases which come directly under histological observation terminated fatally, we have no right to claim that alterations of that kind *necessarily* occur in cases which take a favorable course. They are, therefore, not more than types of histological changes observed in cases of acute insanity, which terminated fatally. However, I should be inclined to take a little different view of the earlier stages of change from the normal, of which we, likewise, found examples preserved in the tissues examined. They would, physiologically, of course, not amount to an inhibition, but to a limitation of function. Now, for this, at least, one anatomical equivalent is offered in the early affection of the basal processes of the pyramidal cells, and it will be admitted that the earliest characteristic symptom of insanity consists in an embarrassment and limitation of function.

With this, however, we do not exclude the possibility of the actual occurrence of the farther advanced changes in cases which take a favorable course. An inhibition of function, in a physiological sense, does not involve the anatomical destruction of the organ, or its constituent cell elements, and does not exclude the possibility of a return to the normal condition, as long as the destruction is not anatomically complete.

With a very different view, therefore, we would look upon the transformations of ganglion cells, as presented in figs. 12, 13 and 14. In these, there is no anatomical element left of the original cell, aside from a resemblance

of the external form, and no element to which any interchange of matter in a physiological sense, could be attributed. We have called this condition, for some years past, the *pearly degeneration of the pyramidal cells of the convolutions of the brain.* It is the entire mortification of the cell, and I give the illustrations of this condition, for the purpose only of comparing them with those described in the foregoing. They are a constant feature in cases of dementia, and most frequently found in the precentral and the upper frontal convolutions. Yet, I do not intend to enter, here, into any topographical details, and must leave the working up of the material collected in reference to it, to some future occasion.

NARCOLEPSIA.*

BY JOSEPH WORKMAN, M. D.,
Toronto, Ontario.

Under the above appropriate title, *Dr. Gélineau* records in the *Gazette des Hôpitaux* an interesting case, which, though considered by him as *unique*, we are inclined to regard as typical of a form of cerebral disorder probably not unknown to some members of the profession; at all events, we are able to recall at least one instance in which it has been brought under our notice, though not in a character so sharply marked as that exhibited in Dr. Gélineau's case, which we present in English dress, together with comments:

"Mons. G——, aged 38 years, a retail vender of wooden ware, of sanguino-nervous temperament, presented himself at my clinique on 15th February, 1879. He had never had convulsions in

* A paper read at the Toronto, Ont., Medical Society.

his childhood, nor syphilis later; he had two sons, the younger of whom was only a few months old. His father was nervous, but never suffered under any important disease. His mother died of cancer, and a brother died of ulcer of the stomach. He was himself a moderate drinker; for the past five years he has had acute rheumatism and *herpes tonsurans*. Three years ago, in a warm discussion on a matter of business, he received from his opponent a violent push, to which he responded by a stiff throttling, the issue of which was his arrest, and great subsequent disgust. A little later he received a blow on the head, which did not cause much pain; nor did he experience any abnormal sensibility in this region, or any nervous depression worthy of notice.

For a long time no consequent symptom was manifested; it is only within the last two years that he found when he laughed heartily, or discovered that he could make a profitable bargain, his legs suddenly trembled. Afterwards, if he found when playing at cards that his luck was good, he became so much moved that his arms became powerless, his head drooped, and he fell into sleep, out of which he awaked in a minute. Presently afterwards a slight emotion sufficed to induce his sleep, and subsequently this imperious necessity incommoded him continuously. During his meals he must stop eating four or five times, and repose; his eyelids fall, his hands let go the fork, spoon or vessel; the phrase which he had commenced in a high voice, he ends with great difficulty in a muttering and low articulation; his head is bent down, and he drops asleep. In vain does he rub his eyes, his hand drops powerless, he is overcome, and he curls up and sleeps. If he chances to be walking on the street when this necessity assails him, he tumbles down like a drunken man; he hears the passers-by accusing him of intoxication and deriding him, but he can not make reply; their jests annoy him. When falling, he instinctively endeavors to save himself from passing horses and carriages. When a crowd surrounds him, (a very usual occurrence in Paris,) he hears, or fancies he hears, their commiserations over his condition, and the impressions thus made still more paralyzes him and retards his uprising.

If he undergoes any profound emotion, whether pleasant or painful, the necessity to sleep becomes more imperious and sudden; and thus, when he closes a good bargain, meets a friend, or wins at cards, he suddenly falls and sleeps. If he goes to the *Jardin des Plantes*, near to the cages of the monkeys, where the curious and the soldiers and jesters usually congregate, he goes to

sleep whilst all about him are laughing. If he goes to the theater, he sleeps on entering, at the bare idea of the pleasure he is about to enjoy; he also sleeps on taking his seat, and his son is obliged to shake and pinch him to arouse him; but once the actors appear this is unnecessary, and he follows the piece with interest, without sleeping a moment, unless some pathetic part causes emotion. Bad weather, and above all the approach of a storm, hurries on his sleeping fits, so that he may have two hundred in the course of a day. The only means of arousing him is to shake him violently, or to pinch him, but though when angered he sleeps less, yet a longer repose, and more heavy, is the consequence.

During his sleeps, the pulse, which usually runs at 66 to 68, immediately falls to 58 or 60. His pupils are much contracted when he is awake, but much less so when he sleeps. They contract readily when a light is presented. The accesses last from one minute to five.

No morbid condition is presented; the lines of his physiognomy are tranquil; he eats well, and his sleep by night is excellent. He takes coffee once daily, and he has no constipation. His sexual desires have greatly diminished; he states, however, that he lately has had a son, but that he was conceived at a moment when he was under a fit. He is a member of a mutual aid society, and his diploma bears the diagnosis of *morbus sacer.* He has been attended at home and in the Salpêtriére. When he went, he slept several times, first at the gate of the hospital, next in the hall, and finally in presence of the doctor he came to consult. Bromide of potassium, sub-cutaneous injections, hydro-therapie and electricity had been advised, and finally cauterizations on the neck, but he said he had derived no benefit from anything that was done for him.

The sensations experienced by him in the moment of attack are, profound heaviness, a feeling of intercranial vacuity, a sort of whirling round of the head, and a weight in the forehead and in the back of the eyes. His thoughts become veiled and obscured, his eyelids half closed; yet he hears and retains consciousness; finally, his eyes close completely, and he sleeps. All this passes over rapidly, so that this preliminary period of physiological sleep, which usually extends over progressive periods of five, ten or twenty minutes, lasts with him only a few seconds.

If he is requested to shut his eyes and to walk and speak, as is tried on ataxic patients, his voice becomes extinct, and he sleeps and falls, but without any disordinate movements. If he goes

into any dark place, such as a cellar, he feels a still stronger tendency to sleep. When he walks on a descending street, he has difficulty in halting, and the same when he pushes forward a hand-cart, but when he drags it after him, he does so easily, without sleeping, doubtless because his will is more energetic. (?)

He has never during these sleeps voided his urine or fæces. On one occasion he conversed for half an hour without sleeping. His memory has not weakened; he gives a correct account of the state of his affairs, and he works actively, but not alone, because he can not move around without danger. When he does work alone, he has fewer attacks than when he is accompanied, because, being a great talker, he becomes animated and then goes to sleep."

The fact stated by Dr. Gélineau, as to the greater liability to occurrence of the sleeping fits when the man was pushing the hand-cart before him, than when drawing it behind him, seems to me not ascribable to the cause assigned by Dr. Gélineau, *i. e.*, the higher degree of will energy under which he acted in the latter. Is it not probable that this energy was put forth more strongly when he was pushing the cart forward, and that his attention was then more concentrated on his work, than when the cart was out of his sight. It appears from all the statements made by Dr. Gélineau in relation to the incursions of the sleep-fits, that they were consecutive to manifest psychical, or emotional, disturbances, whether these were of a pleasing or a painful character. Who can believe that when driving a profitable bargain, playing a winning game of cards, entering a theatre, or advancing to the front of the monkey cages, his will was not in a pretty active condition? Would not any discreet neurologist, aiming at amelioration of his disorder, have admonished him against all such provocative indulgences? Assuredly the less earnestly he entered into any sort of engagement, the more probable would have been the avoidance of the fits, and the decrease of their number.

But irrespective of the psychical factors which appear to have entered into the prodrome of the morbid physical manifestations, may not disturbances in the muscular co-ordinating powers have enacted a very important *rôle* in the narcoleptic seizures; and may there not have been an intimate relation between this physical disorder and the blow received by the patient three years before? We all know that very serious morbid phenomena may supervene to injuries of the head, long—sometimes indeed very long—after their infliction. The inability of the patient, when walking down hill, to come to a steady halt, seems to me to point to some tenacious lesion of the cerebellum. The reflex, *quasi* involuntary motions of walking, which required no exertion of the will, were readily performed, but the requirement to bring this faculty into action, in command of a different order of muscles, would seem to have unbalanced him, and to have precipitated the fits. I dare say most of you have noted a similar failure of power in men rather advanced in intoxication. I have seen a very marked instance of it in a boy who was unable to assume or maintain the erect position until he had reached his fifth year. When at length by the assiduous and skillful training of his mother, he began to relinquish the quadrupedal style of locomotion, his greatest difficulty was not that of forward movement, but of stopping in this, and standing still. He could run as fast as other boys of his age, but he could not keep up a regular walking pace with them. The father of this boy is a very intelligent physician, and he has informed me he has always supposed that congenital defect in the cerebellum has been the cause of the boy's muscular infirmity. The shape of the cranium certainly indicates congenital atrophy. The boy is mute, but by no means either deaf or defective in apprehension. He understands

every word spoken to him, and promptly obeys all the commands of his parents, but he never attempts speech articulation beyond three or four common monosyllables. There must therefore be somewhere a missing link between the cerebral center of verbal impressions, and that of the transforming of thought into articulate sounds.

To revert, however, to Dr. Gélineau's patient, what relation can be supposed to exist between any hypothetic organic lesion, or functional disorder, of the brain, and his transient narcoleptic seizures? The fact of the coincident debilitation of the heart's action, as indicated by the reduction of the pulse rate from 66–68 to 58–60, is evidence that the normal supply of blood to the brain has suddenly fallen off; and consequently this organ is brought into that condition of comparative anæmia which modern physiologists hold to be its state during sleep; but whether this change in the blood supply is, in the present case, causal or resultive of the narcolepsy, may be a question for cautious consideration.

Before closing these remarks, I would ask whether the restriction of forward impetus, by the traction of the hand-cart, acting as a sort of railway break, did not operate on the man, as a moderator of his momentum, and thus secure his safe equilibrium. I have little doubt that if we could have the advantage of observing his ordinary unrestricted pace and bodily attitude, his head and shoulders would be seen to be too much in advance of his center of gravity.

THE CAUSAL RELATION NERVE STIMULANTS SUSTAIN TO INSANITY.*

BY D. R. WALLACE, M. D.

The subject to which attention is directed, more fully set forth, might be expressed thus: Nerve stimulants in causation of insanity, as developed in those afterwards becoming insane themselves, or transmitting to their posterity a vitiated nervous organization, as the physical basis of an insane psychosis.

The writer received, a day or two since, the report of Dr. Daniel Clark, Superintendent of the Asylum at Toronto, Canada, well known to writers as a gentleman of excellent parts and liberal culture, as also of some years' experience in a large lunatic hospital.

This gentleman sets forth his opinion of drunkenness as a factor in insanity, in the following language: Speaking of the evil effects of intemperance, he says: "The truth is bad enough without embellishments, and no great reformation is ever advanced by exaggeration." He complains that sensationalists have tried to arouse the public to this evil by stating, he proceeds, as the "chief argument adduced, that at least three-fourths of the insane become such from drunkenness. The opinions of distinguished medical men are quoted in support of this statement. Few statistics are given to substantiate this view. Anxious to reach the truth on this point, as far as the Toronto Asylum is concerned, every name and cause of insanity, since March 1st, 1873, to October 1st, 1879, have been examined in respect to cause, with the following results: My predecessor, Dr.

* Read at the Tenth Annual Meeting of the Texas State Medical Association.

Workman, carefully checked off all the admissions up to 1872, and the admissions of the years since that have been individually noted to the present time. Nothing has been left to guess work or averages."

"There were admitted into the Asylum, from July 1st, 1853, to October 1st, 1879, 3,837 patients. In that number, there were classified in their histories, temperate, 3,342; intemperate, 387; unknown, 108.

It will be seen that 9.48 per cent is the proportion of drunkards—reported as such—for this long period of over twenty-six years. It is no doubt true that among those in whom the cause is said to be unknown, are some who became insane from the immoderate use of spirits. Yet, as an offset, many are reputed to have become insane from drink, in whom this intemperance was the result of the disease, and not the cause, in any sense." This, the quotation from the above named report, I make it the occasion of bringing this important social evil before the Texas Medical Association, in a short study embodying some facts from my own observations during five years of asylum residence.

I shall accept the facts given in the statistics as true in sense, intended by the compiler, and then attempt to show that, in fact and reality, the results arrived at are wide of the truth, misleading. The last sentence in the above quotation, merits especial notice—"many are reputed to have become insane from drink, in whom this intemperance was only a result of the disease, and not the cause, in any sense." While true, from Dr. Clark's standpoint, and agreeing, substantially, with the opinion expressed by the writer, in the meeting of Superintendents of American Institutions for the Insane, held at Auburn, N. Y., in 1875, it is not true, "in any sense," as there is a sense, and it is, doubtless, the true one, in which it is not true, as will be more fully shown as we proceed.

From a careful inquiry into and a working up of all the cases admitted into the Texas State Lunatic Asylum, during the five years of my superintendency of this Institution, I am prepared to state, after having given the facts the most searching scrutiny, that, from basis of classification common in lunatic hospitals in this country and Europe, in something over two per cent of all the cases admitted, in which drunkenness was the "assumed" cause, it was the effect of the insanity, and not the cause of it. Yet, as will be apparent, it is believed, from facts to be submitted when the true test is applied, the intemperance was the cause, and not the effect, in most of these cases—not in all.

While, therefore, Dr. Clark is right from his standpoint—a view restricted to the individnal insane—in a more enlarged one, taking in all the facts traceable, bearing upon the case directly and remotely, his statistics, and the conclusion deduced from them, misinterprets this whole subject. The object of this paper, its *raison d'être*, is to show that the usual method of classification, &c., the basis upon which statistics rest upon the subject, is vicious.

To come to the matter at once, the method complained of makes no account of the transmitted predisposition to the whole class of neurotic troubles, insanity with the rest, induced in progenitors, by intemperance It admits of little doubt, but that in most of those cases charged up to the account of heredity, the improper use of nerve stimulants of one sort or another was the original predisposing cause. To what extent this statement is true, few, I am sure, would be prepared to believe who have not, as the writer has done, worked up a large number of these hereditary cases. He has surely been a most careless observer of the changes and phases of disease, who has been in active practice for

the last quarter of a century, and has not noted that neurotic troubles have, from year to year, been strangely on the increase, the tendency being to modify all other diseases. That there are other causes at work in our social life, besides the abuse of nerve stimulants, few would be disposed to question; still, it is believed that, after making all due allowance, this is the great *fons et origo mali.*

An analysis of statistics collected during the five years of my superintendence of the State Lunatic Asylum, shows there were 31 cases in which drunkenness was the assumed cause. A little examination into the history of the admissions soon raised the number, as shown by my private memoranda, to 78. It is the custom of lunatic hospitals, it may be observed, to set down in the rosters of admission, as the cause, the one given by the friends accompanying the patient to the Asylum or that set forth as such in the proceedings had under a writ *de lunatico inquirendo*, when the insanity has been made matter of legal investigation. This, of course, every superintendent receives *cum grano salis*, and forms his own opinion upon a quiet and leisure survey from all the facts accessible to him from his observation of, and intercourse with the patient himself as well as from inquiry of, and correspondence with friends and relatives.

Regarding it as lying at the foundation of all rational treatment and management of the insane, as well as all trustworthy generalizations upon the subject, during the whole of my residence in a lunatic hospital, I gave the closest attention to the etiology of insanity. In doing this and in the exercise of my best judgment upon the facts—and it was my custom to obtain all accessible to letter or inquiry—I was lead, as already mentioned to raise the number assumed by friends at 31 to 78 as being much nearer the truth. It will cease to create sur-

prise that this should be so when it is remembered, that, in most cases, the friends will assign almost anything but the true one, as the cause when they think there is danger of reflecting upon the patient or his family. It is a fact familiar enough to all who have had to do with the insane, that it is only in exceptionable cases the relations of a case to be hereditary, however clearly it may be so, but will have recourse to almost any means of concealing the fact, even to the extent of assigning causes and incidents so trivial as to provoke a smile, did not one remember the amiable sympathy prompting their motives. But to return to the special subject in hand —the hereditary transmission of the effects of intemperance, and of abuse of other nerve stimulants.

I call your attention again to the statistics of the State Lunatic Asylum from February 10th, 1874, to April 19th, 1879, when I turned over to my successor. I found in the Asylum upon taking charge 115 patients. There were received during my superintendency 612—making a total of 727 I had under inspection. There were few of the 115 found as inmates of which much could be learned—being most of them old cases and their families inaccessible. Though their cases were worked up as best I could the results were so unsatisfactory, I leave them out of the account. In about one-third of the cases of admission, no cause was assumed—being tramps and other persons unknown in the respective communities from which they came; so that little could be ascertained in regard to their antecedents except what was obtained from themselves—not always very reliable. Even under this unpromising state of things, inquiry was not entirely barren of result. Upon a careful sifting of the data, there was what was regarded as good reason for the inference that the original cause, individual or transmitted, was the abuse of nervous

stimulants in about 22 per cent of their cases. In the other two-thirds, drink was the assumed cause in 31. A similar ferreting out, working up and sifting of facts, gleaned from the individual and family history, disclosed what seemed to justify the conclusion that the abuse of nerve stimulants was the most probable cause individual or inherited in 127, or about four-fold as frequent as was assumed—I say most probable, because in no case of insanity, with rare exceptions, can it be known with absolute certainty what the cause is. It is only by the exercise of the judgment upon the facts, as developed in each case, that the probable cause is reached. My conclusion, influenced by no sort of bias of which I am aware, was, and is, that he who should assume as the cause of insanity, remote or exciting, individual or transmitted, in one-third of all those occurring in this country, the abuse of nerve stimulants of one sort or another, in one way or other, would not, upon the whole, be far from the truth.

It but remains to state, that in arriving at the conclusion set forth above, the writer only set down to the account of this cause such cases as the information obtained in regard to parents, the antecedents of the individuals themselves or their observed neurosis or psychosis made it more likely that such was the true cause. That mistakes were made is morally certain, but it is confidently believed they were made rather in favor of, than against this abuse; and, the whole truth known, were this possible, would increase rather than diminish the victims of the abuse of nerve stimulants. In no case was opium or tobacco assumed as the cause except in that of a few persons whose family history or whose own neurotic or psychic condition rendered it more probable than any other supposition.

If, therefore, my observation extending over a duration of five years' residence within the walls of a lunatic hospital is to be taken as a trustworthy basis for generalization, I have no hesitation in announcing it as my conviction that not less than one-third of the insane population of Texas owe their condition immediately or remotely in their own personal habits or those of their ancestry transmitting a vitiated, depraved nervous organization, unequal to the strain of social surroundings and the duties of life—to the abuse above indicated.

And, it is believed, to be far from sufficiently dwelt upon, in dealing with this subject, that there is large evidence in innumerable facts meeting us on all sides in all the thoroughfares and relations of life that there are great numbers more of our unfortunate fellow-men who though they do not, because of more fortunate surroundings, break down into outright mental derangement so as to become unable to accommodate themselves to their social surroundings, labor under partial insanities which not only interfere with their usefulness and enjoyment, but which plunge them into dissipation and crime—these unfortunates in turn transmitting to their offspring a still more unstable, depraved nervous heritage, destined under less propitious auspices to break out into fully developed insanity.

M. CHRISTIAN ON NON-RESTRAINT.

The following is a translation of a paper read by M. Christian before the Medico-Psychological Society of Paris,* at a meeting held on October 25, 1880, under the presidency of M. Legrand du Saulle. Although the subject of which it treats has been repeatedly discussed in the pages of this JOURNAL, we need not apologize for presenting to our readers the opinion of so distinguished an alienist as M. Christian—an opinion rendered all the more valuable and authoritative by reason of its recent utterance and the expressions of approval which it elicited on the part of other members of the Society who subsequently participated in the debate.

GENTLEMEN: I know no more irritating question than that of non-restraint, for while the partisans of this method are regarded as ardent apostles of humanity, we, who remain faithful to what is called restraint, run the risk of passing for retrograde spirits, hostile to progres: a little more and they will have us the direct descendants of the torturers of the middle ages. On closer inspection, however, one is compelled to admit that, since the beginning of the world and the existence of suffering humanity, cases occur in which means of restraint must be employed. When a physician wishes to make an obstreperous child swallow a dose of medicine, he has it firmly held, and forcibly administers the remedy which is to afford relief. No surgeon begins an operation, however trivial in character, without having first rendered it impossible for his patient to move; and if in our day he is able to abandon the means of restraint which were formerly in current use, it is because he can place the patient entirely at his mercy by means of chloroform. Nay more: suppose, for instance, that in a medical or surgical service, a patient—and the case is one of frequent occurrence—who is the victim of fever and delirium, should get out of bed in the night, disturb his associates and put the

* *Annales Médico-Psychologiques*, November, 1880.

whole ward in disorder, do you believe that one would hesitate to fix him in bed, or, if necessary, apply a camisole? Indeed, families themselves, be their social status what it may, have no such scruples. When one of their members, under the visitation of disease, becomes boisterous, violent and dangerous, he is rendered incapable of self-injury by restraint—and with what gentleness this is applied, you may gather from the condition of the unfortunates who are brought to us covered with contusions and abrasions, and having on their ankles and wrists the visible traces of the cords with which they have been bound. Observe that in all these cases it is the safety of the *entourage*, the interest of the patient himself which demands the restraint. The madman must be prevented from injuring himself and others, and here we have a motive before which every other consideration must yield.

How comes it, then, that the moment the question has reference to physicians specially devoted to the care of the insane, the aspect of affairs is entirely changed? That which is freely permitted to the general practitioner, surgeon or obstetrician, is absolutely interdicted in the case of the alienist, for whom to apply the camisole on an insane patient, it becomes almost an outrage on humanity! We have here a psychological problem whose solution I will not attempt to discover.

Up to the reform of Pinel, insane persons were the objects of the worst forms of treatment—a state of affairs which was due to several reasons, but principally this: Inasmuch as none but the most boisterous and violent lunatics were shut up, it was thought that too great precautions could not be taken. They were kept in chains within narrow limits in infected cells. These madmen, ill-nourished and ill-clad, left to the care of ignorant and coarse keepers, were thus subjected to conditions best calculated to augment their maniacal excitement, which, rendering them more and more formidable, led to the fatal error of multiplying their chains and fetters. To Pinel belongs the glory of having shown that they were traveling the wrong road, that lunatics were patients, that they required gentle treatment, to be well-clad and well-fed, and that they were not to be consigned to dark cells, but lodged in well-ventilated and properly-kept rooms. "To keep," says he, "excited patients in a constant state of seclusion and restraint, to abandon them, without defense, to the brutality of servants, under the pretext of the dangers these incur, to rule them, in a word, with a rod of iron, as if to shorten the term of an existence which is considered deplorable, is doubtless a very convenient method of surveil-

lance, but one which is well worthy of the ages of ignorance and barbarism; it is not less contrary to the results of experience," etc. (*Traité Médico-Philosophique de l'Aliénation Mentale, 2e édition, Paris*, 1809, *p.* 262). The essence of Pinel's reform is contained in the above few lines, and of its fruitfulness we may judge by the progress made since the beginning of the century. Whatever of good has been done had its origin in Pinel, and it is but right to bear this in mind, especially when Conolly's claims are opposed to those of the French reformer. It would seem as though everything had been attributed to the reform of Conolly. When the matter came up for discussion in France, a physician who worthily bore an illustrious name, Casimir Pinel, devoted to it a series of articles in M. Delasiauve's *Journal de Médecine Mentale* (1862), and reduced the subject to its true proportions. In point of fact, Conolly accomplished but one thing: he applied in England the principles which Pinel made triumphant in France nearly a half century before. When, in 1839, Conolly undertook the direction of the asylum at Hanwell, nothing had been changed in the old system, with its damp cells, chains and manacles. He would have nothing to do with this past mode of procedure; the barbarous methods which Pinel had abolished in France at the close of the eighteenth century, Conolly caused to vanish in England in 1839. His bold initiative was an immense benefit to England, and sufficed to immortalize its author's name. But where Pinel had accomplished a manly and lasting task in confining himself within prudent limits, Conolly wished to make a *tabula rasa* and invent a new system. He imposed as an absolute rule the complete suppression of every means of restraint.

From the day on which Conolly applies his reform, all excitement disappears in his asylum; patients the least amenable to discipline, obey the gentle and firm voice of the physician as if by a charm; the attendants are all intelligent, faithful, of a patience capable of every trial. So true, indeed, was all this, that in order to ensure sleep, all that was necessary in the case of even the most excited patients, was to have them swallow a large glass of fresh water at bedtime! Gentlemen, when I read these things, written in good faith by a conscientious physician worthy of all respect, I bow my head in admiration. I am struck with the fact that in a latitude differing so slightly from our own, there are lunatics so entirely different from those which I have had occasion to observe; that among those English people, who do not exactly shine by

whole ward in disorder, do you believe that one would hesitate to fix him in bed, or, if necessary, apply a camisole? Indeed, families themselves, be their social status what it may, have no such scruples. When one of their members, under the visitation of disease, becomes boisterous, violent and dangerous, he is rendered incapable of self-injury by restraint—and with what gentleness this is applied, you may gather from the condition of the unfortunates who are brought to us covered with contusions and abrasions, and having on their ankles and wrists the visible traces of the cords with which they have been bound. Observe that in all these cases it is the safety of the *entourage*, the interest of the patient himself which demands the restraint. The madman must be prevented from injuring himself and others, and here we have a motive before which every other consideration must yield.

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reason of their gentleness and mansuetude, there suddenly appears on the scene a corps of attendants so gentle, so patient, so long-suffering. But having admired, I examine and interrogate; and I learn that in all these asylums, so easy of management, a few ancillary means are nevertheless necessary. It may be a padded cell, in which the patient can be abandoned to himself without fear of self-injury; gloves like those used by boxers or fencers, which they apply to prevent him from injuring himself or others; or garments of a thick, substantial fabric, buttoned behind, and used to preclude their removal or destruction; or, again, they may envelop him in a sheet; finally and especially, it is surveillance, a surveillance exercised every instant by two, four, or it may be six of these model attendants, who delicately seize the patient in their robust arms whenever he becomes too boisterous, and, without struggle, without violence, have him glide into the padded cell. And these are not the only means: the lavish use (*larga manu*) of narcotics, such as opium, morphia and chloral, forms an essential part of non-restraint.

Gentlemen, I invent nothing. You know that non-restraint has had the good fortune to be acclaimed with enthusiasm, and that in England, in Germany, and in Switzerland, every one has desired to adopt, or has believed that he adopted, the system. The experience now extends over years, and it is very profitable to listen to the opinion of those who have applied the method.

M. Dagonet spoke to you, at the outset of the discussion, of the reaction which has begun in England, where the camisole is again in use in a certain number of asylums in which it had been severely proscribed. And shall I tell you what has become of non-restraint in Germany? Quite recently the German Psychiatrical Society put the question on the order of the day. It was discussed at great length, a committee was appointed to examine it in all its bearings, and each member related what his individual experience had taught him. Read that discussion, and you will see with what lukewarmness Conolly's doctrine was defended. "I know no alienist in Germany," said Laehr, "who accepts non-restraint in an absolute manner. Nor is there any who voluntarily accepts means of restraint and applies them systematically." The case could not be better stated, and I venture to say that in France we are all of the same opinion. We avoid restraint as much as possible; but when it is imposed on us by force of circumstances, it is

our duty to apply it, for we have to protect the madman against himself, and ourselves against him.*

Conolly himself was unable to do otherwise, and to attribute to him the honor of a great discovery, is really to be satisfied with mere words. He only followed in the wake of Pinel, his agitation against the camisole being the only innovation on his part. Does the camisole merit the anathemas which have been heaped upon it? It has been said that it impairs respiration, that it obstructs the circulation, that it imposes a forced position of the upper extremities; that it readily causes sloughs at the elbows and shoulders. These charges do not date from yesterday, and they were refuted by Esquirol in his notes on Ellis.† If these charges were well founded, who of us, gentlemen, would dare continue the use of the camisole? But I am free to say that, in the asylums which I have the honor to direct, whether at Maréville or at Charenton, I have never observed anything of the kind. I use the camisole, but I use it as seldom as possible, and on an average I have never had two per cent of patients on whom it was applied. I say emphatically that when the camisole is well made, when it is cut from a soft and flexible material, when it is sufficiently ample, when, finally, it is only used on the physician's order and under his control, then not only does it not hamper the patient's movements, but it enables him to move about at liberty, and, if need be, he may be afforded sufficiently free motion of the arms and hands. If, in viewing the question from its sentimental aspect, you deplore the insult offered to manly dignity by camisoling a fellow-creature, let me ask if this manly dignity is not otherwise compromised by the fact of patients covering themselves with ordure, denuding and mutilating themselves, and striking those who surround them? Is this anything more than a piece of humanitarian sentimentalism? I may say that for me the camisole possesses one immense advantage—it prevents struggling between the patient and his keepers. Were this the only reason for retain-

* Do what we may, there will always be dangerous lunatics—there will be those who want to kill themselves, mutilate themselves, who will tear off their clothing, indulge in fæcal self-defilement, and strike their associates or keepers. If kind words sufficed to calm them, do you suppose recourse would be had to restraint? Kind words, however, only produce this effect in the books; and even in that corner of Paradise lost called Gheel, when a patient becomes disturbed, he is restrained—he is chained.

† Ellis' Treatise on Insanity, translated by Archambault, with notes by Esquirol. Paris: 1840, p. 246.

ing its use, it would appear to me all-sufficient; for, do what we may, we shall never be able to recruit our attendants from a class other than one in which fisticuffs do not pass for an act of brutality, nor shall we ever succeed in inculcating that patience, that indifference to insult which we physicians only acquire by dint of reflection and a sense of duty. See, too, how many patients themselves ask to have the camisole applied when they feel the approach of excitement; they bear it no ill-will, whereas they readily conceive hatred for the keepers whom we constitute a body-guard never to lose sight of their charges. How often do we thus see engendered, as has been well pointed out by M. Voisin, delusions of persecution which render the patient intractable. That may all be true, you will say, but it is not less true that the camisole can be abolished, and the proof is that it has disappeared in a large number of asylums. I do not deny that. But I know also that before the law of 1838, there were but very few asylums, and that lunatics were for the most part allowed to be at large. Families did what they could or what they would, and the world did not come to an end. Will you deny, however, that the actual state of affairs does not constitute an immense advancement? You suppress the camisole—all well and good—but I persist in believing that you gain nothing by it.

I beg your pardon, gentlemen, for having occupied your attention so long. Permit me to finish with a last consideration. Since non-restraint has flourished, you have often had occasion to read how frequent have become, in English asylums, fractures of the ribs, ecchymoses and subcutaneous effusions of blood. The thing has become so common that the question has been raised, forsooth, whether the osseous system of lunatics is not more friable, if their blood has not a tendency to decompose. I do not know what foundation there is for this supposition; I only know that in France we have as yet seen nothing of the kind; I know that this singular alteration of the bones and blood only occurs in non-restraint asylums,* and, should I appear sceptical, I believe that the best prophylaxis will be to dispense with the gentleness of model attendants and return to the humane and reasonable use of the camisole.

Nothing could have been more gratifying to M. Christian, than the general acclamation with which his paper was received. It

* Lacher, Ueber die Knochenbruchigkeit bei Psychischkranken in Allg. Zeitsch, xxxvii, I Heft, 1880, s. 72.

would seem, from the discussion which followed, that however averse Frenchmen may be to Conollyism in their asylums, they are, nevertheless, in matters of debate, body and soul, non-restrainers. To the congratulations of M. Blanche on the speaker's outspokenness of opinion, were added those of M. Delasiauve, who resented the charges of backwardness, made by their neighbors across the Channel, and disposed of England's pretentious claims to superiority. He mentioned a series of articles in the second volume of the *Journal de Médicine Mentale*, in which Casimir Pinel, without depreciating the merits of the illustrious English alienist, answered with an emphatic negative, the question, "is it true that the methods of treatment extolled by Conolly, differ, in essence, from our own, or that they are at any rate superior?" He made sarcastic allusion to the charges of "barbarism," and asked, granting that there are patients who must be restrained in some way or another, which was the lesser of the two evils—our "horrible" camisole, or "your padded cells lined with keepers, ready to put their hands on the maniac's shoulder?" Opinions differed, and they could be duly weighed. "But let it be well understood," he continued, "that non-restraint being the rule with us, as with our neighbors, the use of the camisole only applies to the very exceptional cases, where restraint is necessary." On a visit to Quatremares, he found, among from 550 to 600 patients, only from four to seven in camisoles, a result, he opined, which did not point to any inferiority on their part. In reply to M. Magnan, who, at the previous discussion, had congratulated himself on having adopted the English system, he stated the other side of his argument, that calm ensued on the suppression of the camisole, namely, that patients intractable in liberty, oftentimes cease to be so in the camisole, instinctively yielding, as they do, to the obstacle which they feel they can not overcome.

In joining his to the felicitations already bestowed, M. Lunier counselled moderation on both sides. He was of the opinion that, with a more numerous corps of attendants, the number of instances in which the camisole is employed, might be still further reduced. There ought never to be less than one attendant to every fourteen patients. He called renewed attention to the fact that in asylums where the camisole is not employed, other means of restraint, either mechanical or chemical, are in vogue, and corroborated M. Christian's remarks in reference to the enormous consumption of chloral and bromide of potassium in such institutions. The complete suppression of the camisole seemed to him an impossibility,

ing its use, it would appear to me all-sufficient; for, do what we may, we shall never be able to recruit our attendants from a class other than one in which fisticuffs do not pass for an act of brutality, nor shall we ever succeed in inculcating that patience, that indifference to insult which we physicians only acquire by dint of reflection and a sense of duty. See, too, how many patients themselves ask to have the camisole applied when they feel the approach of excitement; they bear it no ill-will, whereas they readily conceive hatred for the keepers whom we constitute a body-guard never to lose sight of their charges. How often do we thus see engendered, as has been well pointed out by M. Voisin, delusions of persecution which render the patient intractable. That may all be true, you will say, but it is not less true that the camisole can be abolished, and the proof is that it has disappeared in a large number of asylums. I do not deny that. But I know also that before the law of 1838, there were but very few asylums, and that lunatics were for the most part allowed to be at large. Families did what they could or what they would, and the world did not come to an end. Will you deny, however, that the actual state of affairs does not constitute an immense advancement? You suppress the camisole—all well and good—but I persist in believing that you gain nothing by it.

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Nothing could have been more gratifying to M. Christian, than the general acclamation with which his paper was received. It

* Lacher, Ueber die Knochenbruchigkeit bei Psychischkranken in Allg. Zeitsch, xxxvii, I Heft, 1880, s. 72.

would seem, from the discussion which followed, that however averse Frenchmen may be to Conollyism in their asylums, they are, nevertheless, in matters of debate, body and soul, non-restrainers. To the congratulations of M. Blanche on the speaker's outspokenness of opinion, were added those of M. Delasiauve, who resented the charges of backwardness, made by their neighbors across the Channel, and disposed of England's pretentious claims to superiority. He mentioned a series of articles in the second volume of the *Journal de Médicine Mentale*, in which Casimir Pinel, without depreciating the merits of the illustrious English alienist, answered with an emphatic negative, the question, "is it true that the methods of treatment extolled by Conolly, differ, in essence, from our own, or that they are at any rate superior?" He made sarcastic allusion to the charges of "barbarism," and asked, granting that there are patients who must be restrained in some way or another, which was the lesser of the two evils—our "horrible" camisole, or "your padded cells lined with keepers, ready to put their hands on the maniac's shoulder?" Opinions differed, and they could be duly weighed. "But let it be well understood," he continued, "that non-restraint being the rule with us, as with our neighbors, the use of the camisole only applies to the very exceptional cases, where restraint is necessary." On a visit to Quatremares, he found, among from 550 to 600 patients, only from four to seven in camisoles, a result, he opined, which did not point to any inferiority on their part. In reply to M. Magnan, who, at the previous discussion, had congratulated himself on having adopted the English system, he stated the other side of his argument, that calm ensued on the suppression of the camisole, namely, that patients intractable in liberty, oftentimes cease to be so in the camisole, instinctively yielding, as they do, to the obstacle which they feel they can not overcome.

In joining his to the felicitations already bestowed, M. Lunier counselled moderation on both sides. He was of the opinion that, with a more numerous corps of attendants, the number of instances in which the camisole is employed, might be still further reduced. There ought never to be less than one attendant to every fourteen patients. He called renewed attention to the fact that in asylums where the camisole is not employed, other means of restraint, either mechanical or chemical, are in vogue, and corroborated M. Christian's remarks in reference to the enormous consumption of chloral and bromide of potassium in such institutions. The complete suppression of the camisole seemed to him an impossibility,

but he should not the less applaud the very praiseworthy efforts which were making, whether to limit its use or with the object of discovering better methods of restraint.

M. Lasègue cited two cases, one of which, he thought, showed the advantages of the camisole, and the other its drawbacks. In the one instance, the patient's friends, horror-stricken when the camisole was suggested, themselves subsequently bound the maniac with ropes, and in such a manner that his wrists still bear marks of the restraint. The second case was that of a typhoid fever patient, in a general hospital, who was clumsily camisoled by a nurse, and found dead on the following morning. M. Blanche judiciously observed that a nurse should never be allowed to apply a camisole without a physician's authorization.

M. Foville fully endorsed the paper. He would only observe, in reference to osteomalacia in paretics, that his opinion differed from that of M. Christian. He concluded, from what he had read in English journals, and corroborated by individual research, that the osseous tissue, as a rule, underwent certain changes in paretics, whereby it was rendered more friable, the simple pressure of the finger, often sufficing to break the ribs in the cadaver. In one of his autopsies, he had seen fractures of the neck, in three successive ribs, the existence of which had not been observed during life. It was true that this condition was not apparent in all paretics, but more especially among such as present trophic disorders. The speaker also reminded M. Christian that he was not altogether correct in stating that Conolly only did in England what Pinel had done in France, at the close of the eighteenth century. In reality, a first attempt at reform, little known in France, had been made by William Tuke, at York, about the time that Pinel effected his.

M. Motet had a short time ago received two pamphlets from the late Dr. Lauder Lindsay on the subject under discussion. These showed that coercive measures were no less abandoned in England than with themselves when necessity imposed their use. Moreover, the English Lunacy Commissioners had borne testimony to the skill, zeal and humanity of physicians who used mechanical restraint, as well as to the successful management of their asylums. Such attestation should, to quote Dr. Lauder Lindsay, "once for all, explode the absurdities and tyrannies of Conollyism, by demonstrating that the most humane and experienced physicians in England consider the *most humane treatment* of the insane, in certain exceptional cases, to be mechanical restraint."

M. Motet referred to Dr. Lindsay's other pamphlet, entitled "Rib-Fracture in English Asylums," in which the conclusion was stated that the real offenders were not so much the poor, defenceless attendants, as the promulgators of the "absurd and mischievous dogma that in *all* cases mechanical restraint is unnecessary and improper."

M. Christian said, in replying to M. Foville's strictures, that he did not deny the possibility of alteration of the bones in certain cases of general paresis. He believed, however, that its frequency had been exaggerated, and, for his part, he had never observed the condition. As regarded the historical question, he had not wished to discuss it. In reality, the question of non-restraint dated only from the invention of the word by Conolly.

M. Magnan, the only non-restrainer present, having been asked by the President if he had anything new to add to his remarks made at the previous meeting, replied that he always used non-restraint in the widest sense, and that he had for it nothing but praise. He claimed as advantages for the system, that it tended to diminish the period of excitement, and modified the standing of attendants and their conduct toward patients. All the inconveniences which were alleged to belong to the suppression of the camisole, amounted to nothing in practice. He himself had misgivings at first, and did not attain his present position at one bound, having begun by swaddling his patients (*maillot*). He had not used a camisole for two years.

At this juncture M. Dagonet suggested the utility of M. Magnan's being enabled to take cognizance of M. Christian's communication, [he had arrived late] with a view of replying to the arguments therein developed; whereupon,

M. Christian said that the question of non-restraint might be summed up in two words: there were patients whom it was necessary to restrain in one way or another, and in his judgment the best known means was the camisole.

M. Magnan maintained that patients became more excited when in a camisole; that when they arrived at the asylum camisoled, they became quiet or less disturbed as soon as the restraint was removed. "It is certain that since I no longer use the camisole, I no longer observe maniacal furor."

The PRESIDENT (Legrand du Saulle). Then incoercible maniacal furor depends on the imposition of the camisole?

M. MAGNAN. In great part.

M. DELASIAUVE. But you always use some sort of restraint?

M. MAGNAN. The means of restraint is not one—it is a simple *maillot de bain.*

The PRESIDENT. And in cases of maniacal furor, where the camisole is of service, you do not use mechanical restraint?

M. MAGNAN. I have already said, and I repeat it, that since the suppression of the camisole, I hardly ever see any cases of maniacal furor.

M. Voisin insisted that, in the absence of the camisole, it was impossible to apply certain therapeutic measures.

M. MAGNAN. The suppression of the camisole interferes in no wise with the treatment of patients.

M. Voisin had especially in view revulsives, such as blisters, the cautery, moxas, etc.

M. Magnan pledged himself to retain a seton or moxa, or to use the cautery, in any patient whatsoever, without applying the camisole.

M. LUNIER. To sum up, we are all in accord as to the principle, but we differ as to its mode of application. In reality, the most confirmed advocates of non-restraint use means of restraint, such as padded cells, covered baths, etc. The absolute suppression of all restraint is, therefore, Utopian. As far as I am concerned, I have greater confidence in the camisole as a means of restraining certain patients, than in surveillance and the patience of attendants.

M. Foville spoke of a visit to a Swiss non-restraint asylum, in which he had seen, about two o'clock in the afternoon, a patient completely nude and covered with ordure, shut up in a padded cell. He inquired what the practice was in M. Magnan's asylum in similar cases occurring in the night.

M. Magnan replied that in such cases, whether occurring night or day, the attendants had orders to wash and reclothe the patient.

M. Blanche moved the appointment of a committee which should study the question of non-restraint. The motion having been carried by a feeble majority, the following were elected committeemen: MM. Blanche, Magnan, Voisin and Falret.

NOTE ON FEIGNED EPILEPSY.

BY M. G. ECHEVERRIA.

The valuable paper on "Feigned Epilepsy" read by Dr. Carlos F. Macdonald at the last meeting of the Association of Medical Superintendents of American Institutions for the Insane, and the interesting discussion to which it gave rise, move me to bring before the readers of the JOURNAL, the simple process that I have for a long time employed to detect simulated attacks of epilepsy.

Attentive examination of the pupils of an epileptic after seizures of *petit mal* or *grand mal*, discloses an alternate dilatation and contraction of the iris, persisting for over a minute after the patient's return to consciousness. This epileptic pupil is also conspicuous during the paroxysms of mania, at those moments when the patient suddenly becomes stupefied for a few seconds, staring with eyes wide open and fixed; it again betrays the dubious forms of psychical epilepsy, and, above all, furnishes, even to those most inexperienced with the malady, a sure means of differentiating, in a ready and easy way, true from feigned attacks. Again, if we cover with a handkerchief or towel the nostrils and mouth of an epileptic, at the moment that he is seized with a fit, this continues without change, because the obstacle thus put to breathing does not materially interfere with the asphyxia characteristic of the initial stage of the convulsive paroxysm, upon tonic contraction of the thoracic muscles. This process, on the contrary, at once determines in the simulator a *besoin de respirer*, with inev-

itable suffocation and struggles, which discloses the best studied imposture. It happens, however, with certain cases, and mainly in incomplete seizures, that the impediment to respiration quickly suspends them, but then, a phenomenon impossible to simulate always takes place, demonstrating in a no less positive manner the real nature of the attacks. This phenomenon is, once more, the convulsive contraction and dilatation of the iris, or the epileptic pupil, which, as already stated, may recur for more than a minute before it entirely disappears, and which becomes very remarkable when the eye is exposed to a bright light.

These important convulsive movements of the iris were first pointed out by T. S. Clouston, in his most able and original paper on the "Bodily Symptoms of Insanity," in the *London Practitioner*, Vol. VII, 1871. The constant association of the epileptic pupil with the various kinds of fits, as well as its pathognomonic value in the mental attacks of epilepsy, are set forth in my contribution on "Epileptic Insanity," to this JOURNAL, July, 1873, and, subsequently, I have alluded to this sign on noticing the process here described, in my communication on the "Clinical Aspects of Epileptic Insanity," read at the International Congress of Mental Medicine, at Paris, in August, 1878, and in my paper on "Nocturnal Epilepsy," read in December of the same year, before the Medico-Psychological Society of Paris.

BOOK REVIEWS AND NOTICES.

Thirty-third Report of the Commissioners in Lunacy to the Lord Chancellor; presented according to act of Parliament, and ordered printed, August, 1879, *by the House of Commons.*

The Board of Lunacy Commissioners for England and Wales consists of twelve members, Lord Shaftesbury being the Chairman, and C. S. Perceval, Esq., the Secretary. The formidable Blue Book before us contains their annual report for 1879; and the various appendices review the statistics and condition of each of the several institutions throughout the realm very much as the same matters would be presented in the reports of the Boards of Managers of the various asylums in our own country.

The whole number of "registered lunatics, idiots and persons of unsound mind" for England and Wales on the 1st of January, 1879, is given as 69,885—male, 31,683; female, 38,202. We find nothing in the report to distinguish the precise number of "idiots and persons of unsound mind," or imbeciles, from the number of the insane proper, though we find in the list of hospitals and licensed houses several institutions designed for idiots and quiet, harmless persons, of which the statistics are given in their order of review. The form of medical certificate includes all three specifications, according to law, of lunacy, idiocy or unsoundness of mind, to be committed to one and the same care—a point as to which the statutes of New York have made great improvement by keeping each class distinct.

Of the whole number as given above, there were in county and borough public asylums 38,395 pauper patients and 476 private patients; in registered hospitals, 2,720 private patients and 117 pauper; in licensed

houses (proprietary institutions) there were 3,535 private patients and 1,110 pauper. The remainder are distributed among naval and military asylums, whose patients are all classed as "private," the criminal asylum at Broadmoor, which shows a total of 483, 109 of them females, and work-houses, in which there are 16,005 pauper. There are also 6,230 "outdoor" paupers registered as insane cases, and there are 472 "private single patients" boarding out or under individual medical care. Not included in the above are also 202 cases of lunacy so found by "inquisition," and residing in immediate charge of their committees.

In England there is no such distinction as in New York between "indigent" and "pauper," the latter term including all patients supported "wholly or in part" at the expense of parishes, unions, counties and boroughs. Those in the military, naval and criminal asylums, 957 in number, being reckoned with the "private patients," it will be seen that the grand total stands as follows: 7,778 private patients and 62,107 paupers. The increase over the numbers of the previous year (1878) was 86 of the former class and 1,261 of the latter, which is considerably below the average increase of the previous ten years, which is stated to have been 1,753 of both classes. Of this pauper increase, 380 cases are said to belong to the number in the licensed houses, a fact which is stated by the Commissioners to be due to the insufficiency of public asylum accommodation, especially in the counties of Essex and Surrey, where new institutions are recommended by the Board.

A large number of tables are given with this report, covering every feature of the subject that can well be made a question of statistics, showing an immense amount of labor. As the Commissioners state, "The

tabulated information has reference to occupations or social position, sex, age, and condition as to marriage, and to the proportion which the patients under several heads bear to the corresponding groups and the general population." The tables also show, with regard to these admissions, the form of mental disorder, the cases of first attack, the number affected with epilepsy, with general paralysis, and laboring under suicidal propensities. The causes of insanity, so far as could be ascertained, are also shown, both as to the aggregate of these admissions, and as to the private and the pauper class respectively. Further, as regards those patients suffering from general paralysis and having suicidal propensities, special tables are arranged, giving the sexes, ages, condition as to marriage, and the causes of insanity. These general summaries are followed by a detailed series of tables, containing the materials from which the summaries were compiled, and giving the principal facts as regards individual, county and borough asylums and certain groups of hospitals, state asylums and licensed houses.

One valuable point in these tables not heretofore attained, is the exclusion of all "transfers" and "readmissions" in the various calculations affecting the question of the real number of the insane, and also the exclusion in the summaries of hospitals and licensed houses, at least, of all institutions devoted exclusively to idiots and non-curable cases, in estimating various results and percentages not affected by such cases.

The grand summary shows the total number of patients in all the institutions and under private care, January 1, 1879, as 47,650, of which the private patients numbered 4,187 males and 3,591 females, the rest being pauper. The total admissions for 1878 were 15,102, of which 1,532, or 10.14 per cent, were "transfers," and

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1,726, or 11.42 per cent, were "re-admissions," leaving 11,844 as the number of new cases. The patients discharged and transferred were 8,796. The deaths for the year were 4,715, of which 2,689 were of males, 2,026 of females. The Commissioners remark in regard to the relative statistics of the two sexes: "The results obtained by distinguishing the sexes in these tables confirm the opinion already generally entertained that, as compared with the population, insanity, congenital and acquired, is somewhat more frequent among males than females. The extent to which it appears to be more curable among females, and the degree in which it is more fatal among males, are also shown. It will be seen that, although the rate of recovery is higher among females than males, the mortality is so much greater among the latter than the former, that the females largely preponderate over the males in the total number under care."

Of the average number resident in asylums during 1878, it appears that the females numbered 25,062, while the males numbered 22,078. As to the distribution of patients in asylums, workhouses, etc., the tables show that 38,871 were placed in the county and borough asylums, 2,837 in registered hospitals, 2,476 in metropolitan licensed houses, 2,169 in provincial licensed houses, 342 in naval, military, &c., 483 in Broadmoor asylum for criminal lunatics, 16,005 in work-houses, &c., and 6,702 were residing with relatives or others. The total ratio of lunatics to population in 1879 was 27.77 per 10,000, against 18.67 per 10,000 in 1859, which does not necessarily denote so much an increase in the proportions of insanity and idiocy, as a more complete provision for all. There has been a gradual increase in the proportion admitted into public institutions, and a corresponding decrease in those kept in workhouses or with relatives. The

Commissioners say, in regard to this: "The experience of another year has confirmed the opinion already expressed in previous reports that the Parliamentary grant of 4s. per head per week, made to the Guardians towards the cost of every lunatic maintained in an asylum, has, in many districts, tended to promote the removal of chronic cases from workhouses and from private dwellings into asylums, and thus, in some counties, it has contributed to render necessary a considerable extension of asylum accommodation."

Another curious fact shown by the tables is that the percentage of pauper lunatics to the total pauperism of the country is 7.71, while the total percentage of paupers to the whole population is 3.19. The distribution of the pauper lunatics is as follows: In county and borough asylums, 36,627; in registered hospitals and licensed houses, 1,303; in work-houses, 16,005; residing with relatives or others, 6,230; chargeable to county and borough rates, 1,894; total, 62,059. To take up the different classes of institutions separately, it appears that there were in the county and borough asylums, January 1, 1878, 17,161 men and 20,647 women; admitted during the year, 5,807 men and 5,797 women. There were discharged, including transfers, 2,992 men and 3,479 women—of whom 1,827 men and 2,420 women were recovered. The deaths were 2,253 men and 1,772 women, leaving on January 1, 1879, in the institutions, 38,871 insane, or 17,678 men and 21,193 women. The appendix of the report shows there are 49 county and 8 borough asylums, and new asylums were projected in Essex, Surrey, Gloucester, Lancaster and the borough of Hull, while in various institutions enlargements and additions were going on.

The numbers of insane gathered into some of these county and borough asylums is very large. In Middle-

sex, Banstead contains 1,603 patients; Colney Hatch, 2,073, and Hanwell, 1,820. Of these pauper patients, there are nearly twice as many women as men. In Surrey, the institution at Wandsworth contains 1,000, and that at Brookwood, 1,012. The Sussex Asylum has 1,790 patients, of whom only 29 were private. At Wakefield, in Yorkshire, there were 1,398, and at Wadsley, 902. Barming Heath contains 1,209, with only 6 private patients. The four asylums in Lancashire have a total of 4,173 patients, all paupers.

The registered hospitals are 16 in number, with 2,837 men and 1,422 women, 1,298 private patients, and 69 men and 48 women paupers. There were admitted to all these institutions during the year, 1,940; discharged, 1,705, of whom 351 were recovered; deaths, 176. It would appear that there were only 117 pauper patients in all these registered hospitals. The Commissioners note that although the charitable element might not prevail in these institutions to the extent contemplated by their originators, yet several were doing good work by affording suitable provision at low payment for the insane of the middle classes.

Bethlehem Hospital receives and treats all patients gratuitously, being a royal foundation with large revenues, and confines its work mainly to acute cases. The institution has a small convalescent establishment at Witley, surrounded by ten acres of land, which will accommodate 25 men and 8 women. The Commissioners report Bethlehem as having accommodation for 290 beds, and remark: "The beds filled are 193 only, at present, excluding the 30 patients temporarily at Witley who will return to London next month. During the year there were 201 admitted and 221 discharged, of whom 101 were recovered." The Commissioners remark that the general aspect of the interior of this oldest

hospital exhibits constant progress in being brought up to the standard of modern asylums. The basement wards, however, they considered so defective in original construction as to lead them to express the wish that they could be closed. They also say: "We are glad to hear that the trough bedsteads in the men's ward, No. 1, are about to be got rid of; and another improvement would be the substitution of low bedsteads for the use of some of the patients now sleeping on the mattresses upon the floors of single rooms." The Commissioners refer with satisfaction to the fact that the wards in this hospital "are made available for medical students who are desirous of acquiring a practical knowledge of mental disease in its earliest stage, and trust that this valuable aid to science will be continued." The importance of clinical instruction in this branch to medical students can hardly be overestimated, especially to those who contemplate entering institutions for the treatment of the insane. It would seem that the convalescent establishment is used only in the summer months, as the Commissioners refer to the fact that at their visit on the 30th of September, the patients were on the eve of their return to winter quarters in London.

In the licensed houses, both metropolitan and provincial, there were 2,260 men and 2,385 women. Of these, 3,535 were private and 1,110 pauper patients. A large number of the persons confined in these institutions are idiots. The charges are regulated according to the accommodations and style of living, and range all the way from £100 to £330 per annum, and in one reach £470.

The report gives considerable attention to a review of cases of suicide in various institutions, in some of which deficiency of attendants is mentioned, but no

reference is made, in connection with the circumstances related, to the practicability of limiting these casualties by the judicious use of restraint.

The Commissioners report 333 work-houses which receive chronic insane, and contain a total of 13,270 persons of unsound mind supported by the poor rates.

One feature of the English system which the statutes do not permit in this State, is that of "voluntary boarders" in asylums, where persons may enter themselves without certificate of unsoundness of mind, their stay in the asylum being "entirely their own wish." We have annually at Utica a number of applications from persons who, feeling themselves unbalanced in mind to a certain degree and impaired in health, apply themselves, or through their friends, for admission to the asylum. We have had twelve such applications within the past year, all of which we have been obliged to decline.

In view of the criticisms and severe comments passed upon the lunacy system of England by the volume of Dr. Bucknill, recently reviewed by us, and the testimony given before the select committee of Parliament, which we have also summarized in this JOURNAL, we reproduce here the opinions of the Lunacy Commissioners upon this subject. They say:

"A good deal of unfavorable comment has lately been made upon the licensed houses and their proprietors, both before the select committee of the House of Commons (whose report we shall have occasion presently to notice) and elsewhere. Some witnesses called by the committee went so far as to 'urge the immediate abolition of all such houses, on the ground of the temptation to keep profitable patients longer than necessary.' A system which places the insane in charge of persons who derive profit from their detention, is no doubt objectionable in theory; and in practice (like many other things) may be open to abuse. But so far as regards the licensed houses in England and Wales, which alone

come under our observation, we are convinced that under the strict supervision and the safeguards which the lunacy acts provide, no such abuses are possible as have been in some quarters seriously alleged, such as the 'incarceration' of sane persons, or the prolonged detention for corrupt motives of insane persons who have entirely recovered their reason. Nor are the proprietors of licensed houses open to the sweeping charges of dishonesty and self-seeking which have been brought against them as a body. It should not be forgotten that these persons to some extent are competing with each other and with hospitals in a business which, to be remunerative, must be conducted on principles of ordinary prudence and common honesty.

Moreover, in the vast majority of cases (admitting that instances to the contrary might possibly be found), the speedy cure of an insane patient is, on pecuniary, if on no higher grounds, an object of the greatest importance to the persons with whom it rests to decide where to place him under treatment, and every cure that can be shown becomes in fact the best advertisement of the establishment in which the cure is effected.

Our own opinion is that the licensed houses supply at present a social want; and that their abolition, without the substitution of other and better establishments, would assuredly multiply cases of illegal charge and consequent neglect and ill-treatment of lunatics, and would also lead to the clandestine removal of many such persons to foreign parts.

Were asylums for the reception of private patients erected at the public cost, we doubt whether such institutions would be more acceptable to the friends of wealthy patients than the hospitals now registered under the lunacy acts, which do not receive many lunatics of large fortune. What these substitutes should be, is a matter of more difficulty. Certainly, the experience of past years does not show any disposition on the part of the public to increase the number of institutions such as the present hospitals, founded on the principle of 'applying the excess of payments of some patients for or towards the support, provision or benefit of other patients.'

These views, it will be seen, are much in accordance with the conclusions of the select committee, appearing in page sixth of their report."

Of the "single patients," there were registered, January 1, 1878, males 188, females 286; registered during

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Moreover, in the vast majority of cases (admitting that instances to the contrary might possibly be found), the speedy cure of an insane patient is, on pecuniary, if on no higher grounds, an object of the greatest importance to the persons with whom it rests to decide where to place him under treatment, and every cure that can be shown becomes in fact the best advertisement of the establishment in which the cure is effected.

Our own opinion is that the licensed houses supply at present a social want; and that their abolition, without the substitution of other and better establishments, would assuredly multiply cases of illegal charge and consequent neglect and ill-treatment of lunatics, and would also lead to the clandestine removal of many such persons to foreign parts.

Were asylums for the reception of private patients erected at the public cost, we doubt whether such institutions would be more acceptable to the friends of wealthy patients than the hospitals now registered under the lunacy acts, which do not receive many lunatics of large fortune. What these substitutes should be, is a matter of more difficulty. Certainly, the experience of past years does not show any disposition on the part of the public to increase the number of institutions such as the present hospitals, founded on the principle of 'applying the excess of payments of some patients for or towards the support, provision or benefit of other patients.'

These views, it will be seen, are much in accordance with the conclusions of the select committee, appearing in page sixth of their report."

Of the "single patients," there were registered, January 1, 1878, males 188, females 286; registered during

the year, males 77, females 99; discharged during the year, males 55, females 85, of which the recoveries were, males 6, females 14, and deaths, males 18, females 20; 135 of these lunatics were so found by inquisition, and ordered by their committees into unlicensed private care, but notified to the Commissioners.

In regard to boarding out patients in private houses, the Commissioners say:

"The removal of a large number of chronic lunatics from hospitals and licensed houses, with a view of placing them in private abodes, has been occasionally advocated as a measure likely to be advantageous to the patients. There may be many cases now in establishments for the insane no longer needing active treatment, or very constant supervision who might receive sufficient attention and care at their own homes, in charge of their nearest relatives, if these were able and willing to receive them; but as to 'single charge' by strangers, all our experience goes to this, *that although in favourable circumstances patients so placed are made happy and comfortable, yet that a large number of them are less well-looked-after, and are not better satisfied with their position than they would be in an asylum or other institution.*—(The italics are ours.—EDS.)

The fact is that persons really well-qualified to take charge of the insane, and willing to do so for a pecuniary recompense, are comparatively few; fewer still are those who would accept such charge at the low rates often current in licensed houses and hospitals, where not only do the poorer patients participate as a matter of course in many luxuries provided for the richer, but where both rich and poor can be maintained and treated at less cost than singly by reason of their aggregate number."

The Commissioners congratulated themselves on the conclusion arrived at by the select committee of 1877, that under the present system of administration of the lunacy laws, "no allegations of *mala fides* or of serious abuses had been substantiated," although they endorse the suggestions made by that committee, that the various existing lunacy acts should be consolidated.

The Lord Chancellor (to whom the Lunacy Commissioners render this report) has the matter in charge at the present time. The Commissioners go on to suggest some modifications in minor points such as the form of medical certificates, the order of reception in which they think that the signer should undertake to visit the patient at regular intervals, and that in the case of paupers notice should also be given to a justice, and that the admission of a private patient on the mere certificate of his relatives should be prohibited. The medical certificates required under the English laws are not nearly so well guarded as those in some of the United States and especially in the State of New York.

The appendix to the parliamentary report already spoken of quotes this part of the statute of New York of 1874, pertaining to the certificates of the physicians, their qualifications, &c., and speaks of this statute as especially careful in guarding against improper commitments, and calls attention to the fact that "in no other State besides New York is the approval of a court in regard to medical certificates necessary."

In tabulating the ages and civil condition of 10,433 patients in county and borough asylums in 1878, 136 were under 15; 544 between 15 and 20; 2,086 between 20 and 30; 2,561 between 30 and 40; 2,143 between 40 and 50; 1,460 between 50 and 60; 996 between 60 and 70; and 507, 70 and upwards. In the same number it appears that 4,183 were single persons; 4,920 married; 1,249 widowed, and 81 "unknown." The same ratio holds pretty nearly in the other institutions, except that there is a larger proportion under 15 in registered hospitals and licensed houses. It is found also that the proportion of *Suicidal* patients to the whole number of admissions is on the average of all the institutions 28.6 per cent, or

24.6 for the single, 32.5 for the married, and 28.7 for the widowed. The total number of *General Paralytics* admitted into all the institutions during 1878 was 1,141. (921 men to 220 women), or a proportion of 8.6 per cent on the total admissions. Of these 206 were single, 819 married, 107 widowed, and 9 unknown. As to the forms of disorder, out of 13,309 patients admitted in 1878, the cases of mania were 7,165, (1,587 suicidal); melancholia, 2,873, (1,731 suicidal); dementia, 2,397, (401 suicidal); congenital insanity, including idiocy, 727, (56 suicidal); and other forms of insanity, 147, (34 suicidal). It will be seen the suicidal patients foot up 3,089, (male, 1,782; female, 2,027). Both in suicidal cases and those of general paralysis, the same causes seem to be chiefly predominant in the figures, to wit: of *moral* causes, "domestic trouble," "adverse circumstances" and "worry and over-work;" of *physical* causes, intemperance, accident, or hereditary influence. Of the whole number of insane, the first moral cause is credited with 6.8 per cent; the second, with 5.2 per cent; the third, with 5.9 per cent; the first physical cause, with 14.6 per cent; the second, with 3.1 per cent; the third, with 17.5 per cent; the rest being divided among a long list of which "previous attacks" has 13 per cent, and 22.8 per cent are "unknown."

There are some general observations, however, that naturally arise from these successive reports of the English Lunacy Commissioners. It is clear enough that this body has generally been composed of men of great practical judgment, and is, therefore, a conservative body, in the sense that they are never willing to risk the good already attained by running into radical measures that always reach further than they were intended; nor are they disposed to launch out into wholesale condemnation of a system on account of a single

evil discoverable in it, instead of applying the necessary remedy in that particular case. In this respect, they furnish a wholesome example and model for all visitorial bodies.

It is noticeable, too, that they desire no special investment of powers, but have rather held themselves consistently throughout as an *advisory board.* In the recent Parliamentary inquiry into the subject of the lunacy laws in their bearing upon the "liberty of the subject," Lord Shaftesbury, Chairman of the Commissioners, was asked the question, if that Commission did not really need more *power* to carry out their visitorial supervision, and he replied:

"We, in visiting asylums, have no power at all; we have only to examine and report. And it is very undesirable that we should have further power. It would only cause a great deal of bad blood and opposition, and I am sure that the success we have had with the county asylums, has been entirely because we have done everything by persuasion, by the force of experience and constant observation, and we have never exercised any authority. We have never had any to exercise, and it would be most unadvisable to give us authority."

So, too, of the question of restraint or non-restraint so much mooted at the present time. Whatever impressions may have been industriously circulated, in some quarters, on this subject, it is a fact that the English Lunacy Commissioners have not undertaken to lay down "non-restraint" as an accepted dogma or doctrine to be enforced. They do not seem to have gone beyond the point of urging the *minimum* of restraint; which simply recognizes the obvious truth that restraint is not a positive thing to be desired or advocated by anybody for its own sake, any more than insanity itself is; but is rather a negative, exceptional thing, to be resorted to only in case of necessity, to prevent far greater evils than the restraint itself can be.

Any one who reads the Annual Reports of the English Lunacy Commissioners must have been struck with their moderation on this subject. No public clamor or agitation has changed their course or drawn them into extreme views or discussions. The chairman, Lord Shaftesbury, who has held that position since the creation of the board in 1828, and has since personally witnessed the steady development of the system of hospital care of the insane in Great Britain, has, perhaps, more than any other statesman, living or dead, given dignity and strength to this cause, by his wise counsel and persistent personal labors in the organization of the lunacy system. He has had the rare quality of holding himself in harmonious unity of action with the views of the best medical men, so that his and their best labors have not been mutually antagonized by the intrusive fancies of well-meaning reformers or the superficial views of malcontents. At a meeting of the British Psychological Society in October, 1880, in London, in reply to a toast proposing the health of his lordship, after briefly referring to his connection with lunacy work since 1828, and the condition of the insane then, and the great work that has been since accomplished, he made reference to the public agitation in regard to the insane, and the restriction of their liberties, and mentioned the fact that the Parliamentary committee recently sitting had discovered no cases where patients were confined "without good and sufficient reason for their being shut up," and added:

"Now, at the present time, there is rather a tendency in another direction—a tendency which ought to be rather checked; because, recollect, we who are in charge of the legal duties in regard to lunacy, must consider not only the interests of the insane, but also the interests of the public. [Hear, hear.] We must be very careful, indeed, how we hastily let loose upon the public persons whom we are not quite certain have been restored to the power of

self-control. The tendency now is to let out everybody who is shut up, and henceforth to shut up nobody at all. Now, every advance which you make in your great and important duties, is a step towards the removal of the most profound affliction that has ever been permitted.

I can conceive of nothing more sublime and more Christianlike than the institution and application of these studies, and, though there were in former times great instances of cruelty and abuse, my experience in various asylums—private as well as public—is not only favourable to the highest order of intellect, but to the truest and deepest sentiments of humanity towards the poor creatures who are there confined."

All this is in strong contrast with the foolish, and one could almost say in some instances malignant misrepresentations, too current on this side of the water, emanating mainly from persons who undertake with little or no experience to guide the public mind on this subject, and to pass judgment upon State Boards of Managers and other visitorial bodies in this country.

We have taken pains to examine the Commissioners' Report of 59 of the English county asylums, including such large establishments as Colney Hatch, Hanwell, Wakefield, Whittingham, Prestwick, &c., all of which contain a large proportion of chronic patients. These 59 asylums contain 38,658 patients. In 48 of them the Commissioners report 3,598 recoveries, in 6 of them they do not mention the number of recoveries of those discharged, and in 5 make no reference to the discharged patients.

Of the 59 asylums the Commissioners report 46 as using seclusion, and they enumerate 4,958 cases or occasions of seclusion which would seem to be the most frequent mode of restraint or confinement for excited and destructive patients. In one institution where seclusion is reported, the Commissioners found a patient locked in a single room, which the asylum authorities

declared was not seclusion, "they only reported seclusion when the shutter of the window was closed as well as the door." It is hardly necessary to say the Commissioners did not agree with this definition. In one institution besides seclusions "12 persons had been wet-packed for surgical reasons and excitement and restlessness." Wet and dry packing and the shower bath, all seem to be resorted to on occasion in several of the institutions.

The Commissioners report 337 cases of the use of the shower bath in one institution with 689 patients.* Of another institution the Commissioners say:

"The question of having unlocked doors in the asylum appears to have been under discussion here. Where so many lunatics, a large percentage being suicidal or dangerous to others, are congregated, we can not approve of a project which appears to be attended by so much risk without corresponding advantage."

Chimerical experiments of this kind seem to find no favor with the Commissioners.

Topische Diagnose der Gehirnkrankheiten, eine klinische Studie, Von HERMAN NOTHNAGEL. Berlin: 1879. Hirschwald.—(Topical Diagnosis of Diseases of the Brain).

The work before us is an attempt to erect, upon the basis of clinical experience and *post mortem* appearances, the symptomatology of localized foci in the cerebrum. The author, for this purpose, has carefully sifted the material bearing upon this subject, which has been published in medical literature. He excludes from consideration all that is found defective, either in the clinical history or in the autopsy, or in which the clearness of the picture drawn by the observer, appeared impaired by additional vague speculations. It is the author's aim

* This sounds strange when we remember the *Lancet's* violent denunciations of the "hideous torture" by the shower bath in American Asylums.

to bring face to face, without further comment, the observation at the bed-side and the autopsy, and he purposely abstains from all physiological interpretation of the facts observed, even where the circumstances would almost seem to demand the drawing of conclusions.

The cases which are prominently the object of discusion, are: foci from hæmorrhages, from emboli, from thromboses, and exclusively those in which the affection was:

1. Of a chronic, stationary character.
2. Wholly limited and circumscribed.
3. Of no influence upon the parts surrounding the lesion, neither by pressure, nor by the production of circulatory disturbances or of inflammatory processes.

The author wishes to have excluded from consideration, the "recent" cases, on account of the mixed character of the symptoms, which they at all times present in the beginning. He determines a period of at least from six to eight weeks after the attack as the time when the parts indirectly affected by the lesion, can be considered as restored to their normal condition. He accepts further, in the main, Hughlings Jackson's division into *destroying lesions* and *discharging lesions*, of which the latter are especially characterized by symptoms of irritation and convulsions, which, when distinctly confined to certain groups of muscles, may likewise be useful for a local diagnosis. These cases, however frequently connected with the occurrence of tumors in the encephalon, are like the latter, in general, designated as the most liable to give rise to errors in diagnosis. Other forms of cerebral diseases which may occasionally be found to some degree circumscribed, especially the sclerotic and atrophic processes, do not come into consideration, as they are affections generally of a progressive character. Whether progressive bul-

bar paralysis belongs here or not, is a question which the author leaves undecided.

The work itself is divided into two parts: I. Special Symptomatology. II. Review of the Focus Symptoms.

In the first, by far the larger half of the book (534 of the 613 pages of the whole), Dr. Nothnagel gives, in detail, the symptomatology of the following parts of the encephalon: Cerebellum; crura cerebelli; pons Varolii; medulla oblongata; pedunculi cerebri; corpora guadrigemina; thalami optici; corpora striata; centrum ovale; cortex cerebri; cornu ammonis; claustrum; capsula externa; ventricles; basis cranii; glandula pituitaria; aneurism of the basilar artery.

Under each head we find, first a description of cases, arranged into groups, viz: recent hæmorrhages; stationary hæmorrhagic foci and abscesses; tumors; they are all accompanied by critical remarks. Secondly, an analysis of the observed facts, and thirdly, a summary under the title of diagnostic principles. An abstract of any value, of this part of the book, can not be given, as it will become a standard work for every one interested in the subject, and for all future investigations. Even the diagnostic principles, appended to each chapter, can not rightly be apprehended apart from a close study of the author's analysis of the symptoms. As the general result, however, it is to be stated that no single characteristic symptom for any special lesion of any special part can, at present, be given. The only trustworthy guide in this obscure field of medical diagnosis, in a given case, is the coincidence of certain marked symptoms, or of peculiar groups of symptoms. Yet, even then the local diagnosis is made with the greater difficulty, the higher in order the parts are which are supposed to be affected.

In regard to those morbid phenomena which would be of the greatest interest to most of our readers, the psychical or intellectual disturbances, the book is silent throughout. No evidence whatever has, as yet, been brought forward, which would justify *even the supposition of a special localization of these.* There is nothing more known with any degree of positiveness, than that they are associated with affections of the grey cortical substance of the cerebrum. Lesions of certain circumscribed districts of the grey cortex either do not give rise to any noticeable symptoms, or they produce, like the diffuse affections of the brain and its meninges, disturbances more or less marked in the *whole intellectual sphere.* These statements are, of course, not surprising to those who have made a special study of mental diseases and its pathology; yet, the fact is worth mentioning, in view of the vague position taken by some writers on this subject, in this country.

In the second part of the work, "Review of the Focus Symptoms," Dr. Nothnagel arranges into groups, in a demonstrative manner, the signification which the individual phenomena have for a local diagnosis. In the introduction, he directs attention to the great influence upon the diagnosis of cerebral diseases, which was brought about by Griesinger's division of the lesions into local and diffuse affections.

The local lesions or foci produce phenomena in a three-fold way—

1. In consequence of the destruction of a circumscribed part of the brain, there will be a complete arrest of the functions of this part; or, in the words of Goltz: foci of defect create symptoms of defect. Since the signification of many districts in the brain is not known, it is clear that the symptoms of defect of a great number of foci are not recognizable. They remain latent,

as is the technical term. However, where there are distinct phenomena of defect, they of course form the most important and reliable element in the local diagnosis. It is evident that these, physiologically, must present themselves as paralyses of the different functions.

2. Yet, not every paralysis is dependent, directly, upon the destruction of a distinct district. If there is, for instance, a recent hæmorrhagic focus, the blood-coagula may, possibly, act upon neighboring districts by pressure, by an impairment of the circulation or, in another unknown manner, arrest the function and thus give rise to symptoms similar to those of defect, of larger extension, which can be designated as phenomena of inhibition. If the patients keep alive long enough, the symptoms will gradually disappear in proportion to the absorption of the exudation, and finally, only those remain which directly depend upon the defect in the substance of the brain.

3. A local focus may, under certain circumstances, produce a local irritation and thus raise symptoms which, in a physiological sense, must be designated as phenomena of irritation. The diagnostic value of these also, as it will be admitted, is rather doubtful, since we have no means to determine the extension of the irritating effect.

Now, from these three points of view, the author discusses disturbances in the motory and in the sensory sphere; disturbances of vision, of hearing, of smell, of taste; disturbances of the muscular sense and of the reflex actions; changes in the electric excitability; vasomiotor and trophic disorders; disturbances of speech; disorders in the digestive apparatus and in the urinary system; headache and vertigo; disturbances of the sensorium.

From this part of the work, there can also no abstract of any value be given, and we refer, for all particulars, to the study of the original, which should have a place in every medical library. Appended to the text, the reader will find valuable information as to the literature of the subject, comprising references to five hundred and sixty books, pamphlets and articles.

Handbuch der Geisteskrankheiten.—(*Handbook of Mental Diseases.*) By Dr. HEINR. SCHUELE. Leipzig: 1881. F. C. W. Vogel.

Scarcely two years have gone by since the publication of the sixteenth volume of the German edition of Ziemssen's Cyclopædia of Medicine, containing Schüle's Manual of Mental Diseases, and, some months ago, we had the pleasure of receiving, from the author personally, a copy of the second edition of his elaborate work. It is not merely a reprint of the former, but in many important particulars a *revised* edition. The high value of the book, as we have announced already in a former review, is to be sought for not only in the completeness of the material worked up and in the true scientific spirit with which the material is arranged, but in the originality of the work as the result of the author's personal studies and his own experience in his capacity as one of the chief physicians to a prominent and admirably conducted institution for the care of the insane. The changes made in the present edition are characteristic of the same thoughtfulness of the distinguished author, which prevails throughout the book, and of his earnest efforts to clear the way for the solution of difficult problems as well as for the better understanding of conditions obscure and not easily accessible in their nature. We find examples of this in the revised chapter on catalepsy; in the chapter on hallucinations and their theory; in the chapter on insanity from affec-

tions of the sexual organs and from excesses in venery; in the chapter on the different forms of chronic mania, of mania furiosa and others. Aside from this the author has kept up with the times and supplemented what he found worthy to be noticed.

We again recommend the book as the best standard work published in the German language since the death of Griesinger.

Compendium der Psychiatrie für Praktische Aerzte und Studierende.—(*Compendium of Psychiatry for Practical Physicians and Students.*) By Dr. J. Weiss. Vienna: 1881. Bermann & Altmann.

The German psychiatrical literature, after a period of confining itself to communications of the results of close special studies, still under the guidance of Griesinger's leading handbook, attracts attention by the recent publication of a number of most valuable and elaborate works. We had the pleasure not long ago of announcing Schüle's Manual of Mental Diseases, of which, after the lapse of not quite two years, to-day a second revised edition lies before us. There is also, Kraft-Ebing's text-book of psychiatry, on a clinical basis, the result of prominently original observations and, like Schüle's of a wide experience in asylum practice. Further, Leidesdorf's textbook of mental diseases; Emminghaus' Psycho-Pathology; etc. The little compendium of psychiatry before us, is an eminently practical book; it is astonishing how much material of real value, worked out in an admirable manner, the two hundred and seventy-three pages of the book contain. The author in the introduction explains the reasons why, with our present defective knowledge of the physiology, anatomy and pathology of the organ of mind, any account of mental disturbances has to confine itself merely to a description and an exposition of the ob-

served clinical facts. Thus the whole material divides itself naturally into a general part, comprising the symptomatology of insanity, and in a special part, containing the symptoms arranged in groups on an empirical basis. In the first part, therefore, the composing elements of the phenomena of insanity are discussed, in the second the different forms characterized under which insanity presents itself.

The author then proceeds at once in the first chapter to the description of the most conspicuous and imposing phenomena of psychical derangement, the delusions and hallucinations, and draws a clear picture of the different features of both, and of their relations to each other.

The second chapter treats of the interesting theme of psychical debility. The author is well aware of the breadth of this symptom and the difficulty of applying to it the proper measure. He characterizes its difference from lack of education and experience, from stupidity, and from the lighter degrees of dementia, and considers the symptom in its two aspects, as one, brought into existence, secondarily, in the terminal stages of protracted psychical affections, and as one of primary nature forming the soil upon which psychical disturbances develop.

Chapter III, morbid sentiments, their character, origin and relation especially to delusions and hallucinations. Chapter IV, anxiety, considered more as a state of psychical disorder than as a single symptom. Chapter V, stupor, in the author's opinion, not to be taken as an advanced stage of any other symptom, but as one of a independent significance; it is the complete psychical and motory arrest, the typical picture of cerebral debility, the minimum functionality of the brain. It may, however, be associated also with the most various psychical disturbances. Chapter VI, abstinence, based mainly upon suicidal thoughts; delusions of narrowness; re-

ligious delusions and hallucinations. Chapter VII, incoherence. The author distinguishes between a primary transitory and secondary chronic incoherence and explains their nature, and relation to other phenomena, as aphasia, etc. Chapter VIII, disturbances of sensibility and motility. They are described as the most perilous symptoms of psychical alienation in so far as their appearance is indicative of a direct danger to the life of the patient. They are evidences, in the author's opinion, of an organic change, from an anatomical point of view of structural disease of the brain; while the other affections do not pass beyond the line of mere functional alterations. With this latter view of the author we certainly do not agree, yet do not consider it the place to enter into any controversy here, since from the standpoint which predominates in the book, the question is of subordinate importance; it does not in the least affect the high value of the work.

In the second, the special part, Dr. Weiss treats of the different symptomatical groups of insanity. Since we have given in the foregoing at least, some idea of the richness of the book and the admirable arrangement of the material, we do not consider it necessary or even practical to make abstracts from the following chapters. The pictures of the different forms of the disease are delineated in the same concise and pregnant language, which characterizes the whole work and the author's communications in general, and they are full of evidences of close personal observations and asylum experience. The groups are arranged as follows: Chapter I, Paralytic Insanity; the only form in which the author makes reference to the pathological anatomy of the disease. Chapter II, Epilepsy. Chapter III, Alcoholism, in which the author puts the bad consequences of an abuse of alcoholic liquids not as much on account of the alcohol itself as

upon admixed substances and adulterations. Chapter IV, Chronic Mania. Chapter V, Dementia. Chapter VI, Melancholia. Chapter VII, Mania. Chapter VIII, Circular Insanity.

The author has met in his compendium a real want in psychiatrical literature, and we recommend the book heartily to medical practitioners and all students of medicine.

Diseases of the Pharynx, Larynx and Trachea. By MORELL MACKENZIE, M. D., Lond., etc. New York: Wm. Wood & Co., 1880.

A Treastise on Diphtheria. By A. JACOBI, M. D., etc. New York: Wm. Wood & Co., 1880.

A Practical Treatise on Nasal Catarrh. By BEVERLEY ROBINSON, A. M., M. D. New York: Wm. Wood & Co., 1880.

Hygienic and Sanative Measures for Chronic Catarrh and Inflammation of the Nose, Throat and Ears. Part I. By THOS. F. RUMBOLD, M. D. St. Louis: Geo. O. Rumbold & Co., 1880.

Dr. Mackenzie's work is but the first volume of a "Manual of Diseases of the Throat and Nose, including the Pharynx, Larynx and Trachea, Œsophagus, Nasal Cavities and Neck." The volume under consideration forms one of Wood's Library of Standard Medical Authors. In this instance the publishers are to be congratulated upon their selection, for though the present seems somewhat fruitful in works upon these and kindred topics, we know of no author more able to instruct the profession than Dr. Mackenzie.

The author has not only availed himself of the fruits of his own rich experience, but has freely gleaned in other fields, English, Continental and American.

Each section of the work is opened with a sufficiently detailed account of the anatomy of the part treated,

both descriptive and surgical. The nomenclature used is, in the main, that of the Royal College of Physicians, and the Latin, French, German and Italian equivalents are given in each instance.

Simple chronic pharyngitis the author regards as almost always amenable to treatment, and in the majority of instances a cure may be expected. In regard to granular pharyngitis, his prognosis is not so favorable, but improvement may be expected. Complete restoration of the vocal powers is seldom to be expected, especially if the patient expects to use his vocal organs as a speaker or singer. Careful directions are given as to treatment, both medicinal and hygienic. The enlarged follicles in granular tonsillitis the author destroys with London paste, touching one follicle at a time with the caustic. Dr. Mackenzie evidently does not regard the extirpation of the larynx as a procedure to be entered upon without due and careful consideration, and only to be undertaken at the explicit request of the patient, to whom it has been fully explained. His views upon diphtheria are of interest as compared with the next work on our list, Dr. Jacobi's. Like Dr. Jacobi, Dr. Mackenzie does not give assent to the doctrine of Oertel, Hueter and others, regarding the active agency of bacteria in this disease. He regards it as not a modern disease, and gives a brief but interesting and concise history of the subject, its literature, etc. In the treatment of diphtheria he divides his agents into four classes, recuperative, alleged specifics, antiseptics and expectorants. Of the first of these he regards iron and quinine the most valuable. Thirty minims of the Tinct. Ferri Perchloridi are to be given to adults every two or three hours. After enumerating the various so-called specifics, Dr. Mackenzie dismisses them by saying: "None of the various drugs just enumerated, how-

ever, can legitimately lay claim to anything like a certain and specific action." Of the general antiseptics, iron, chloral of potash, carbolic and salicylic acid are named. Of chlorate of potash, he says: "the general weight of evidence is very much in its favor. Ten to twenty grains may be given every two or three hours."

Of local treatment Dr. Mackenzie places most dependence upon lactic acid as a solvent. Various agents are also mentioned as local antiseptics. The value of ice and of hot fermentations, by steam, or otherwise, are not overlooked. The entire volume is well written, and will amply repay perusal and study.

Dr. Jacobi has long been known as a contributor to the literature of diphtheria. The present monograph is divided into nine chapters, as follows: History, Etiology, Manner of Infection, Contagion and Incubation, Symptoms, Anatomical Appearances, Diagnosis, Prognosis and Treatment.

Dr. Jacobi defines diphtheria as "a specific, infectious, and contagious disease, characterized principally by epithelial changes in, and exudations of fibrine on and into mucous membranes, the surfaces of wounds, and the rete malpighii, thereby constituting the so-called pseudo-membrane," and considers it as a disease known and recognized by the ancients.

Concerning the etiology of diphtheria Dr. Jacobi summarizes his views as follows:

"Diphtheria is pre-eminently a disease of childhood. It is not frequent amongst adults, very rare in old age. * * * Exposure and 'colds' may act but as proximate causes only. Most cases take place in the winter months in our climate, but there is no 'invariable season law.' 'Filth' contributes to the generation of diphtheria, as it does to dysentery and typhoid fever. * * * * The presence of bacteria in the diphtheritic blood has not been proven. There is no theoretical ground for assuming that pre-

venting the bacteria of a diphtheritic patch from making their way through the underlying mucous membrane will, *per se*, prevent general diphtheritic infection of the system."

Our space will not allow us to follow Dr. Jacobi in his admirable summary of the pathology and symptomatology of this disease. We can only, in conclusion, refer to his remarks upon treatment, which are quite extended, and well considered.

The following paragraph, taken from the resumé of treatment advocated by other authorities might be considered somewhat satirical, and is perhaps so intended: "A. Erichsen, (Petersb. Woch. 1877, No. 4,) hydrogyr. cyan. 0.0006, (gr. $\frac{1}{100}$), to children under three years 0.0012, (gr. $\frac{1}{50}$), over three years, every hour; every two hours during the night. *He did not succeed in losing more than three children out of twenty-five.*"—(Italics are ours.—Eds.)

Dr. Jacobi advocates active and immediate treatment, and pertinently remarks, "waiting long means often waiting too long." He is a stronger advocate of the use of alcohol than Dr. Mackenzie, and relies more upon its use from the commencement than does the former. The chlorate of potash, he points out, as is too frequently forgotten, is an irritant poison, in large doses, and Dr. Jacobi thinks in some cases, a fatal result has been produced by its indiscriminate use. He advises its use (pg. 161) in small but frequently repeated doses, to produce its local effect; the idea being to keep it constantly in contact with the diseased surfaces. The chloride of iron, mixed with glycerine and water, is to be given in frequent doses, a child a year old taking a drachm every twenty-four hours, and for adults a larger amount, this is to be administered in divided doses, as often as once an hour, half hour, or every ten minutes. Care is directed against any procedure cal-

culated to wound inflamed surfaces, and the local applications advised are mostly of a mild nature.

Dr. Jacobi is very stringent in his directions regarding prophylaxis. The work is concise and forcible in style as by one who speaks *ex cathedrâ*, and the author may congratulate himself upon the favorable reception which it is sure to meet.

Dr. Robinson's work is a careful and apparently conscientious record of personal experience and information in the treatment of those troublesome and often intractable ailments coming under the common head of catarrh. Opening with a sufficiently extended account of the anatomy, physiology and pathology of the parts involved, Dr. Robinson describes the instruments for, and the methods of observation and diagnosis. The methods of treatment are well described, and the formulæ given are those which extended experience have proven to be the best. Dr. Robinson, except in removing hardened secretion, does not make frequent use of liquid applications, preferring instead, vapors and powders. The concluding chapters are upon the surgical treatment of hypertrophied turbinated bones, and upon post-nasal catarrh. The author does not depend upon local treatment alone, and his remarks upon internal medication are well considered.

The work is one of much value, and will be found of practical assistance in the treatment of catarrhal troubles.

Dr. Rumbold's book is but one part of a contemplated work on the hygiene and treatment of catarrh, and is written as much with a view to popular as to professional reading. His directions and rules are not such, we imagine, as will find ready adoption as a prevent-

ive of catarrh, as the majority of mankind will prefer to run some risk rather than wearing three or four thicknesses of under-clothing, giving up tobacco, bathing infrequently, and changing the under-clothing but once in two or three weeks. Concerning treatment, nothing new is presented.

On the Construction, Organization and General Arrangements of Hospitals for the Insane, with some Remarks on Insanity and its Treatment. By THOMAS S. KIRKBRIDE, M. D., LL. D., etc. Second Edition. Philadelphia: J. B. Lippincott & Co., 1880.

The first edition of this work appeared in 1854, and has since been a standard of information to all seeking knowledge on the various topics of which it treats. Twenty-six years additional study and experience, have confirmed some of the views expressed in the first edition, and broadened others, so that we have now a volume of over three hundred pages, as the successor of the first edition which contained but eighty pages.

Dr. Kirkbride's views are already so well known, that we shall content ourselves with simply enumerating the sub-divisions of the work, and not attempt to make any summary of his statements on construction and organization. The opening chapters treat of insanity, its frequency, curability, and the economy and methods of caring for the insane. Dr. Kirkbride does not believe that the home treatment of the insane, compares in efficiency with that of well organized hospitals. And in this his views are confirmed by the statement of Dr. Browne, quoted in Sir James Coxe's testimony before the Select Parliamentary Committee, that "the worst case in an asylum was better than the best out of an asylum." In this connection we may say that he would discard altogether, if possible, the word "asylum," substituting for it the term, "hospital for the insane."

The chapters following are upon the steps toward organizing a hospital, selection of a site, amount of land, supply of water, architectural arrangements, size of buildings, number of patients, and more or less minute directions concerning construction, material, etc. These chapters, seventy-one in number, comprise the first part of the work, and are wholly devoted to construction. They are amply illustrated by plans and drawings, and will be a valuable guide to managers and commissioners having charge of the construction of hospitals for the insane. Part two is upon the organization and arrangement of hospitals for the insane, and deals with the general matters of internal administration. The number, character and general duties of the various officers and employés are specified quite fully. Dr. Kirkbride does not think a board of consulting physicians desirable, preferring the plan adopted in the majority of our institutions, of calling in consultation, when necessary, some outside physician. On this point, Dr. Frederick Norton Manning, in his Report to the Government on Lunatic Asylums, says:*

"In Ireland, one or more consulting physicians, receiving, generally, an annual payment of from £100 to £150 a year, are attached to every asylum, and are charged with the duties of occasional visitation, and the treatment, in consultation with the medical superintendent, of all cases in which their opinion and advice may be deemed necessary. The same system exists in a few Scotch asylums—Aberdeen, Dumfries, Dundee and Glasgow. To many of the French asylums, there is attached a consulting surgeon, who receives about £50 a year; his duties being to visit the asylum weekly, and give his advice concerning the treatment of all surgical cases upon which the medical superintendent may think it desirable to consult him. But such consulting medical officers are not attached to any of the English or American institutions,

*Report to the Colonial Secretary after visiting by order "the Chief Asylums in the United Kingdom, on the Continent, and in the United States."

and their appointment is generally regarded as not only unnecessary, but objectionable."

Dr. Kirkbride advocates increased didactic and clinical instruction upon the subject of insanity, and regrets the prevailing ignorance both in the public and profession upon the subject.

From his concluding remarks we quote the following as very pertinent to the present era:

"Although error now as always, maintains its character of spreading more rapidly than truth, and what are called new views, which are often only the old practices of a period long past, are every now and then pressed upon the attention of communities, still it will be conceded, that these errors do not come from those who have been devoted to the care of the insane, and who are practically familiar with their treatment, for they have always formed the bulwark that has steadily resisted all retrograde movement, even if dignified by a claim to advance. It will indeed be against all reason and common sense, when those whose novel views are the offspring of theories engendered in the retirement of their closets, and who are without even the slightest practical knowledge of the subject, shall be selected as the guides to enlighten those whose lives have been spent in an active intercourse with the insane, and a special devotion to everything connected with insanity and its treatment.

One of the remarkable tendencies observed of late, is a disposition in certain quarters to go back to what was not uncommon half a century ago, and under the captivating titles of progress and reform, to ask for a new trial of what has been thoroughly tested, found full of defects, and abandoned. All this only shows, how difficult it is with many to learn from the practical experience and investigations of others, and how much like fashion in other things, are the views in regard to philanthropic subjects, revolving as it were in a circle." * * * * *

"These institutions can never be dispensed with—no matter how persistently ignorance, prejudice, or sophistry may declare to the contrary—without retrograding to a greater or less extent to the conditions of a past period, with all the inhumanity and barbarity connected with it. To understand what would be the situation of a people without hospitals for their insane, it is only necessary to learn what their condition was when there were none."

We congratulate the profession upon the publication of a work which is calculated to do so much toward a better understanding of the principles of hospital construction and management, and which must, we are sure, be received with general commendation, coming from an author so competent by practical experience for the task.

The Practitioner's Reference Book. By RICHARD J. DUNGLISON, A. M., M. D. Second, Revised and Enlarged Edition. Philadelphia: Lindsay & Blakiston, 1880.

Dr. Dunglison's work met with such a ready reception at the hands of the profession, that a second edition was soon called for, and the author, in issuing it, has thought best to enhance its usefulness by adding a large amount of new material, making the present edition about one-fourth larger than its predecessor.

The new material embraces directions upon the writing of metric prescriptions, the use of the hypodermic syringe, the galvanic battery and the clinical thermometer. Diagnostic tables of various diseases are also introduced, and a list of celebrated prescriptions.

For a mere work of reference upon many of these various points, the volume will be found of value, but the terseness of some of its statements will, unless care is exercised, tend to mislead some who consult it hastily, and even do serious harm. For instance, we read on page 329, without further comment or suggestion, that "morphia, subcutaneously, with inhalations of five drops of nitrite of amyl immediately following, have proved successful," in infantile convulsions. On the same page we read that equal parts of water and solution ferri per chlor. (the amount not stated) injected into the trachea, just below the thyroid cartilage, dissolve the membrane in croup, and assists in its expectoration. As a rule,

we doubt the wisdom of the entire class of works of ready reference, to which this belongs; but, if such works must be published and sold, we know of none more calculated to fill its place than Dr. Dunglison's.

SUMMARY.

—The following notice of the election of Dr. John P. Gray as a member of the Societé Médico-Psychologique, Paris, has been received:

MEDICO-PSYCHOLOGICAL SOCIETY OF PARIS,
PARIS, November 30, 1880,
Office of the Secretary General.

Sir and Very Honored Confrère—I have the honor to inform you that the Medico-Psychological Society of Paris, having unanimously adopted the conclusions of the Committee appointed to present your candidature, elected you an associate member at their meeting on the 29th of November.

I congratulate myself on making this decision known to you; it adds to our society a savant whose labors are known to us all, and from whose experience and researches we shall doubtless derive profit.

Accept, sir and dear colleague, the sincere expression of our lively sympathies, and the assurance of my most distinguished consideration. The Secretary General,

Dr. GRAY. A. MOTET.

EDITORS OF THE JOURNAL OF MENTAL SCIENCE ON THE ADMINISTRATIVE DUTIES OF MEDICAL SUPERINTENDENTS.—In view of utterances claiming the entire separation abroad of the medical and administrative management of asylums, the following remarks by Drs. Savage and Tuke, editors of the *Journal of Mental Science*, at the last annual meeting of the British Medico-Psychological Association, are *à propos:*

"Dr. Savage hoped that the Members would more readily come forward and would not require so much whipping up. The enormous number of interesting facts which came before them and were wasted for want of communication distressed the Editors, who wished to collect all they could. There was another suggestion which he hoped would be acted upon—that there should be, occasionally at all events, an addition to the Journal in the form of practical details—for instance, that one Member should take up the question of washing; other Members the best means of arranging kitchens, making ward decorations, &c. They were questions of immense importance. It was all very well for extremely scientific Members to say, "Oh! let some one else do that," but in his opinion all these things came within the scope of a good physician, and if the administration of kitchens and other arrangements could be bettered, surely it ought to be done. He could say for himself, and also for the other Editors, with whom he had discussed the matter, that they would be only too glad if any Members (without requiring whipping up) would contribute such details, and it was to be hoped that next year this suggestion would be found to have borne some fruit.

Dr. Hack Tuke said that he was glad these suggestions had been made. Members would, perhaps, bear in mind his own remarks on a previous occasion when he proposed the setting apart of a corner of the Journal to be designated "Our Confessional," as more was often to be learnt from failure than success."

The senior editor of the *Journal*, Dr. Clouston, as is well known, has personally supervised the extensive improvements at Morningside, where he has ably filled the position of Medical Superintendent, and his recently published plans and specifications for an asylum are well known in this country.

—In our July number we noticed the appointment of Dr. J. B. Andrews as Superintendent of the new State Asylum for the Insane, at Buffalo.

Dr. Andrews did not assume charge of the Asylum at Buffalo until the opening of the fiscal year commencing with October 1st. We can not let this opportunity pass without placing on record our appreciation of his

long and faithful service as an Assistant Physician in this institution. Commencing in 1867, as Third Assistant Physician, he occupied since 1871 the responsible position of First or Senior Assistant, and fulfilled his duties with a commendable zeal and fidelity. To the readers of this JOURNAL he is well known through its pages as one of its editors, and it is hoped that his experience in his new field of labor will find expression through the same medium. It is a matter of gratification while severing his relations with this asylum, that the scope of his labors has only been enlarged, and that his services in the field of Psychological Medicine will be given to an institution in this State. The asylum at Buffalo was opened for patients on the eighteenth of November.

Dr. Andrews has been appointed lecturer on insanity in the Medical Department of the University of Buffalo.

INTERNATIONAL MEDICAL CONGRESS OF 1881.—We have received, from the Secretaries of the Section on Mental Diseases, an announcement of the arrangements thus far made for that section. The officers of the section are as follows:

Dr. Lockhart Robertson, President.

Dr. Crichton Browne, LL. D., F. R. S. E., and Dr. Maudsley, Vice Presidents.

Dr. Gasquet, and Dr. Savage, Secretaries.

The subjects proposed for discussion, are:

Anatomy—1. Modes of Preparation of Nervous Tissue; 2. Morbid Appearances due to Modes of Preparation; 3. Minute Structure of Special Parts of Brain. Physiology—1. Relation of Cerebral Localization to Mental Symptoms, as Hallucinations; 2. Hypnotism. Pathology—1. Of Idiocy, Morphological and Histological Changes; 2. Relations of Insanity to Gout, Renal Disease, Exophthalmic Goitre, and to Coarse Brain Disease. Clinical—1. "Folie à double Forme;" 2. Influence of Intercurrent Diseases on Insanity; 3. Insanity due to Toxic Agents. Therapeutical—

1. Use of Baths, of Narcotics, of Chloral Hydrate, of Opium, and of Alcohol; 2. New and Unusual Remedies. Asylum Administration—1. Cottage and Village Treatment; 2. New Legal Codes, Austrian, Italian and English Projects. Civil Relations of the Insane—1. Marriage, Wills; 2. Insanity and Aphasia. Criminal Relations of the Insane—Special Asylums for Insane Criminals.

The President and Secretaries will feel obliged by your sending a reply, stating if it is your intention to be present at the Congress, and if you have any suggestion as to subjects for discussion.

All communications regarding this section should be addressed to

DR. GASQUET,
DR. G. H. SAVAGE.
Bethlem Hospital, St. George's Road, London, S. E.

THE TRAINING NECESSARY FOR A REAL KNOWLEDGE OF INSANITY AND ITS TREATMENT.—We copy the following editorial from the *Boston Medical and Surgical Journal*, which we commend to the notice of all our readers. Our mail daily brings us pamphlets and addresses which would have never been printed had their authors been guided by the principles here so well enunciated.

"In an editorial article published in the *Journal*, May 20th last, volume cii. page 497, expression was given to a feeling of dissatisfaction with the composition of the then existing lunacy department of the Massachusetts Board of Health, Lunacy and Charity, on the ground that, whatever their other qualifications might be, no one of that department possessed a real knowledge of insanity and its treatment.

This criticism passed unchallenged for more than six months, when exception was suddenly taken to it. We therefore feel it proper, though at this late day, to define somewhat precisely our idea of the requisite training for the obtaining of a real knowledge of insanity and its treatment, as this will, perhaps, best define in what that knowledge consists.

A thorough general medical education is an indispensable preliminary to such training; these studies should be followed by some years of experience in general private or hospital practice, and the final pursuit of the special branch of insanity must be

founded upon and accompanied by personal observation and treatment of the disease as a medical officer in the wards of an asylum.

Doubtless it is possible for a stupid or a lazy person to have had access to all these desiderata, and yet escape the possession of a real knowledge of insanity and its treatment, but without this training we hold that such knowledge is not to be found. A person may know something about insanity and the insane, have a great, and in some ways valuable acquaintance with the statistics of the disease, and the sociology of the afflicted, and yet not possess a real knowledge of insanity and its treatment. We hold it to be of the first importance that such a real knowledge should be not only represented, but strongly represented in any department of lunacy, or on any lunacy commission, as is the case in the Scotch and English commissions. There would still be plenty of room left for executive or administrative capacities. Just as we are opposed to the superintendent of an asylum being made a mere administrative factotum, so we are opposed to a department in lunacy being made a mere machine.

Model for Illustrating the Relation of Nerve Fibres of the Medulla and Spinal Cord.—We have received from Dr. Albert Seessel of New York, by whom it was designed, a model for illustrating this most difficult and important portion of human anatomy. It is constructed of two wood plates, separated some distance and held together by six small wood slats. One plate represents a section of the medulla giving its exact contour about the height of the hypoglossi nuclei; the other plate a section of the median cervical portion of the cord. Both plates are colored to give the various histological details of the cord and medulla. Between the two plates is a series of wires, differing in size and color, to illustrate the different columns of new fibres; anterior, posterior, lateral, &c., their course and decussation. The whole model represents a section of the upper portion of the cord with a correct outline of the same, special attention being given to portray correctly the relation and course of the columns as

well as their relative size. In the anterior column there are two divisions, one inner, represented by green balls and wires, forming the anterior pyramidal column; the other the outer, represented by black balls and wire forming the main bundle of the anterior column. The lateral columns are divided into three parts; the central or latero-pyramidal represented by red balls and wires; the lower and outer cerebello-lateral by brown, and the upper and inner, being the remainder of the lateral columns, by drab balls and wires. The posterior columns are divided into two parts; the inner (Goll's column) represented by yellow balls and wires, and the outer (Burdach's) by blue balls and wires. The center of the wood plate reproduces in general the outlines of the grey matter of the cord.

In the section of the medulla, the pyramids are divided into two parts, the internal, latero-pyramidal, represented by red, and the external, the antero-pyramidal column, by green balls and wires. Above these and between the nuclei of the hypoglossi are black balls representing the remainder or main bundles of the anterior columns. Between these latter and the pyramids are the remainder of the lateral columns covering a large portion of the substantia reticulata and given by drab balls and wires. On the external lateral side of the corpora restiforma are brown balls, (cerebello-lateral columns). Interior to these are blue balls designating Burdach's columns, and above these are Goll's columns marked by yellow balls and wires.

The various colored wires spoken of as representing the columns or parts of columns, traverse the space between the sections of the medulla and cord to represent the actual relation of the fibres, their decussation, &c.

The green wires representing the antero-pyramidal columns pass from the section of the cord to that of the medulla without decussating, whereas the red, marking the lateral pyramidal columns, decussate, forming possibly what is known as the decussatio pyramidum. The brown wires (cerebello-lateral columns) run from cord to medulla without decussating, as do the drab wires, the remainder of the lateral columns and the black wires, the main bundle of the anterior columns. The yellow wires, representing the columns of Goll, and the blue those of Burdach, decussate.

This model in the main is in accordance with the views of Flechsich, Ludwig, Pierret, and Charcot, which Dr. Seessel has partially verified by his own investigations and preparations and partly by the examination of the preparations of Professor Flechsich and others. They are also in a measure confirmed by pathological investigations and by the conditions found in embryonic and fœtal preparations.

We consider this model a most admirable method of illustrating the anatomy of the nervous system, and are glad to learn that Dr. Seessel has others in preparation.

OBITUARY.

William Lauder Lindsay, M. D., F. R. S. E., F. L. S. —It is our painful duty to record the death of Dr. Lauder Lindsay, an event whereby medical science has lost a sincere disciple and our special department one of its best men. Little over a year has elapsed since this distinguished alienist resigned his position as Medical Superintendent of the Royal Murray Asylum, at Perth, in the hope of being able to recruit by rest

a constitution which had been sorely shattered by long suffering and overwork. But he was destined never to enjoy that well-earned ease of retirement which he had so ably advocated for men of his class, in his pamphlet on *The Superannuation of Officers in British Hospitals for the Insane.* He died on November 24th, 1880, at the age of fifty.

Dr. Lauder Lindsay was, in many respects, a remarkable man. As a student at the High School, and subsequently as an undergraduate in medicine at the University of Edinburgh, he carried everything before him. On the completion of his medical curriculum in 1852, he took charge of the Edinburgh Cholera Hospital, and there made some valuable investigations with reference to the communicability of cholera to the lower animals. Appointed Assistant Physician to the Crichton Asylum, at Dumfries, in 1853, he was elected, a year later, when but twenty-four years of age, to the responsible position of Medical Superintendent of the Royal Murray Asylum, an appointment which he held for a quarter of a century.

Our late *confrère* was well known as a botanist, and making lichens a special study, he wrote, and gave to the world in 1856, a *History of British Lichens.* As a geologist he enjoyed no mean reputation, and there is scarcely a subject having a direct or indirect bearing on medical science, on which his prolific intellect and pen have not been engaged. His best production is *Mind in the Lower Animals*, a work which reflects the author's keen perceptive faculties as well as his humane spirit. To Americans, and especially to the readers of this JOURNAL, he is probably best known for his crusade against Conollyism. Enthusiasm, when carried too far, becomes fanaticism, and finishes by defeating the good ends which it would serve. When, therefore,

Lauder Lindsay found so many of his follow alienists in Great Britain so lustily shouting this shibboleth, he was not slow, in the exercise of that fearless, independent spirit which was so striking a trait in his character, to expose the weakness of a dogma which seemed to him to be fraught with so much mischief to a great system. His views and experience are embodied in his contributions to these pages as well as in his articles in the *Edinburgh Medical Journal.* Perhaps the value of his opinions on Conollyism or non-restraint, is best shown in the present practice in British asylums as appears in the Report of the Commissioners of Lunacy.

Cultor veritatis fraudis inimicus, he possessed to an extreme degree the courage of his opinions, and never hesitated, even at the risk of giving mortal offense, to speak the naked truth. In private life he was retiring, not to say seclusive, and, except to travel, seldom left his fireside. He came to this country in 1870, and visited some of our large asylums. Few men have labored so unceasingly for their profession as Lauder Lindsay, and although he has passed away at an age when the majority of men are in their prime, we have the satisfaction of knowing that he still lives among us in his manifold writings, and in the progress which he has helped to achieve for practical psychiatry during the twenty-five years of his asylum activity at Perth.

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